SWM FEE PROTOCOLS

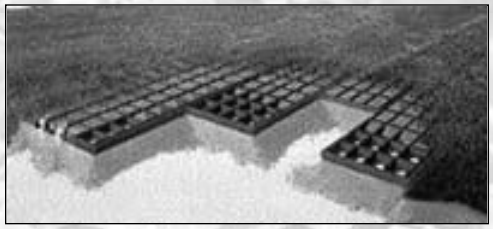
Water and Land Resources Division
February 2002 Draft









KING COUNTY

KING COUNTY, WASHINGTON

SWM FEE PROTOCOLS

KING COUNTY

TABLE OF CONTENTS

SWM FEE PROTOCOLS

This document presents the King County approved methods, criteria, and details for determining King County's Surface Water Management (SWM) fees and fee discounts. These fees are used to fund King County's surface water management program.

Surface water management is the implementation of regulations, capital improvements, facilities maintenance, and stewardship services for managing how rain – or surface water – drains on the land. Water drains through both natural and constructed drainage systems. Natural systems include streams, creeks, rivers, wetlands, and lakes. Constructed drainage systems include pipes, ditches, flow control facilities (e.g., detention ponds), and water quality treatment facilities (e.g., wetponds, grassed swales, etc.). Surface water management helps keep water clean, property safe, and our environment healthy by managing both systems. It serves the people, plants, animals, and fish of our region. Surface water management is also a requirement of the federal Clean Water Act and is integral to protection of Puget Sound salmon populations listed as threatened under the federal Endangered Species Act.

SWM fees pay for regulatory compliance activities, customer and technical assistance activities, capital improvement projects, facilities maintenance, and stewardship services all administered by King County's Department of Natural Resources and Parks. These services seek to manage the quantity and quality of surface waters and their effect on the health and safety of King County's waters and lands. King County is responsible for assessing the fee and providing surface water services only to property owners in unincorporated King County. Incorporated cities and towns are also subject to the same state and federal regulations and they assess their own fees to pay for program requirements.

The first half of the fee is due by April 30th and the second half by October 31. If late, a one-percent-per-month rate-of-interest penalty will be assessed. To discuss this further, please phone 206-296-6519 and ask for a customer service representative in the Finance and Administration Section.

Document Organization

The information in this document is organized into the following four main sections:

SECTION 1.0 SWM FEE CALCULATION

The annual SWM fee is based on the relative contribution of increased surface and storm water runoff from a given parcel to the surface and storm water management system. The percentage of impervious surfaces on the parcel, the total parcel acreage, and any mitigating factors as provided in KCC 9.08.080 will be used to arrive at the relative contribution of increased surface and storm water runoff from the parcel to the surface and storm water management system. The relative contribution of increased surface and storm water runoff from each parcel determines that parcel's share of the overall SWM fee that is collected. The SWM fee revenue needs of the program are based upon all or any part, as determined by the Council, of the cost of surface and storm water management services or to pay or secure the payment of all or any portion of any issue of general obligation or revenue bonds issued in connection with the provision of those services.

1.1 SWM FEE RATE STRUCTURE

The Water and Land Resources Division of the Department of Natural Resources and Parks determines the annual SWM fee for each parcel within the service area using one of the following two approaches, whichever applies:

1. If the parcel is a residential parcel or a very lightly developed nonresidential parcel, a flat SWM fee rate is charged for the reasons set forth in KCC 9.08.060.
2. If the parcel is a light to very heavily developed non-residential parcel, a "per-acre" SWM fee rate is charged based on the parcel's impervious surface coverage. The Division classifies each such parcel into rate categories based on the percentage of impervious surface coverage, which is determined using land use codes or data collected from parcel investigations, or both. After assigning each parcel to the appropriate rate category, the annual SWM fee is calculated by multiplying the total acreage of the parcel times the rate for the category.

Effective January 1, 2002, the following SWM fee rates apply to developed properties within the SWM service area:

Rate Category	Rate Description	Percent Impervious Area	Annual Fee Rate
1	Residential (Single Family)	Varies	$102.00 per parcel
2	Very Light	≤ 10%	$102.00 per parcel
3	Light	> 10% and ≤ 20%	$255.01 per acre
4	Moderate	> 20% and ≤ 45%	$544.02 per acre
5	Moderately Heavy	> 45% and ≤ 65%	$918.03 per acre
6	Heavy	> 65% and ≤ 85%	$1,258.05 per acre
7	Very Heavy	> 85% and ≤ 100%	$1,598.06 per acre

The minimum annual SWM fee in any rate category is $102.00/parcel/year before any rate adjustments are applied (see Section 2.0). If the parcel is a mobile home park, the maximum annual SWM fee in any rate category is $102.00 times the number of mobile home spaces.

When a parcel with impervious surface is divided by the boundary of the service area and a portion of the parcel's impervious surface drains into the service area, the parcel shall be charged as otherwise provided in these protocols on the basis of the lands and impervious surfaces which drain into the service area. When the Director has determined that the impervious surface of a parcel, divided by the boundary of the service area, completely drains outside of the service area, the parcel is considered exempt from all SWM fee rates and charges.

The King County Council by ordinance may supplement or alter charges within specific basins and subbasins of the service area so as to charge properties or parcels of one basin or subbasin for improvements, studies or maintenance which the Council deems to provide service to or benefit the property owners of one or more basins or subbasins.

All parcels subject to SWM fees will be billed based on the parcel characteristics existing on November 1st of the year prior to the billing year. The *billing year* is the calendar year that the bills are sent.

1.2 WHAT IS IMPERVIOUS SURFACE

As explained in Section 1.1 above, each developed non-residential parcel is classified into rate categories based the percentage of impervious surface coverage. This percentage of impervious surface coverage is determined by the Division using land use codes or data collected from parcel investigations, or both. In determining this coverage, the Division uses the definition of impervious surface found in KCC 9.08. In situations where application of the definition is subject to interpretation, the Division has authority to make such interpretation based on its engineering judgement and the guidelines contained in this section.

As specified in KCC 9.08, *impervious surface* means a hard surface area which either prevents or retards the entry of water into the soil mantle as it entered under natural conditions prior to development, and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roofs, walkways, patios, driveways, parking lots, storage areas, areas which are paved, graveled or made of packed or oiled earthen materials or other surfaces which similarly impede the natural infiltration of surface and storm water. Open, uncovered flow control and water quality treatment facilities shall not be considered as impervious surfaces for the purpose of these protocols.

Based on this definition, the following are examples/guidelines for what constitutes or does not constitute impervious surface:

1. All paved areas, including porous pavement or other alternative pavements, are considered impervious. Grassed *modular grid pavement*[1], however, may qualify for an "impervious surface reduction credit" under the grant program described in Section 3.0.
2. All compacted gravel areas are considered impervious. The existence of grass or weeds growing in a gravel area does not convert it to pervious area[2].
3. Dirt (i.e., bare soil) compacted more than the surrounding native soil is considered impervious.
4. Landscape rock (pea gravel or round washed rock) that deforms when walked on or driven on is not considered impervious unless it is underlain by an impervious surface (such as compacted dirt, plastic, concrete, etc.).

[1] *Modular grid pavement* is a general term meaning a brick or block surface with large spaces between the brick/blocks that is filled with soil and growing grass.

[2] In order to convert a compacted gravel area from impervious to pervious, it needs to be rototilled down to the depth of the native soil and then compacted no more than would be done to install grass, and it must not be subject to vehicular use.

5. Raised decks, coverings, or other structures that are slotted are considered pervious if they do not concentrate runoff at one end or the other and the slots are no wider than 12" on center. While the slotted structure is considered pervious, the ground underneath the structure needs to be evaluated to determine whether or not it is impervious.
6. Portable items, other than sheds and other structures, should not be included in the impervious area calculations unless the ground underneath them is considered impervious. Portable items can included, but are not limited to, such things as picnic tables, cars, stacked lumber, stored plastic, garbage dumpster, etc.
7. Vegetated roofs are considered impervious but may qualify for an "impervious surface reduction credit" under the grant program described in Section 3.0.

SECTION 2.0 SWM FEE RATE ADJUSTMENTS

Any person billed for SWM fees may file a "request for rate adjustment" with the Division within three years of the date that the bill was sent. However, filing of such a request does not extend the deadline stated in the bill for payment of the fee. In addition, any adjustment in rate will be based on the parcel's characteristics as of November 1st of the year preceding the calendar year in which the rate adjustment is applied to the bill.

❑ POSSIBLE FEE ADJUSTMENTS

Requests for rate adjustment may be granted or approved by the Director (or the Division as delegated by the Director) under one or more of the following circumstances:

1. The parcel is owned and is the personal residence of a person or persons determined by the County Assessor as qualified for a **low income senior citizen property tax exemption** authorized under RCW 84.36.381. Parcels qualifying for this exemption are exempt from all SWM fee charges imposed in KCC 9.08.070.
2. The **acreage** of the parcel charged **is in error**.
3. The parcel is nonresidential and the **actual impervious surface coverage** of the parcel charged places it in a different rate category than the rate category assigned by the Division.
4. The parcel is nonresidential and the parcel meets the definition of **open space** in the Definitions Section 4.0. Parcels qualifying under this condition will be charged only for the area of impervious surface and at the rate which the parcel is classified under using the total parcel acreage.
5. The parcel is found by the Division to qualify for one of the following discounts as specified in subsequent sections:
   - **Stormwater Facility Discount** (see Section 2.1)
   - **Sixty Five-Ten Discount** (see Section 2.3)
   - **Pervious Surface Absorption Discount** (see Section 2.4)
6. The parcel is owned or leased by a **public school district that provides activities which directly benefit the surface water management program**. The activities may include: curriculum specific to the issues and problems of surface and storm water management, and student activities in the community to expose students to the efforts required to restore, monitor or enhance the surface and storm water management system. Pursuant to RCW 36.89.085, the amount of the rate adjustment shall be determined by the Director based upon the cost of the activities to the school district but not to exceed the value of the activity to the surface water management program. Determination of which activities qualify for the surface water management service charge reduction will be made by the Division. Reductions in surface water management service charges will only be granted to school districts which provide programs that have been evaluated by the Division. The rate adjustment for the school district activity may be applied to any parcel in the service area that is owned or operated by the school district.
7. The service charge bill was otherwise not calculated in accordance with these protocols.

❑ GENERAL NOTES

1. The dollar amount of debt service on revenue or general obligation bonds issued to finance storm water control facilities will not be reduced by the rate adjustments referred to above.
2. The parcel owner has the burden of proving that the rate adjustment sought should be granted.

3. Decisions on requests for rate adjustments will be made by the Water and Land Resources Division as delegated by the Director of the Department of Natural Resources and Parks. Such decisions will be based on information submitted by the applicant (parcel owner or designated agent of the parcel owner) and collected by the Division within 30 days of the adjustment request, except when additional information is needed. This additional information may entail a site assessment by the Division or collection of technical information by the applicant or both. The applicant will be notified in writing of the Division's decision. For rate adjustments involving the three discounts in Item 5 above, more specific review and approval procedures are outlined in Section 2.1 below.
4. If a rate adjustment is granted which reduces the charge for the current year or two prior years, the parcel owner will be refunded the amount overpaid in the current and two prior years.
5. If the Director (or the Division as delegated by the Director) finds that a service charge bill has been undercharged, then either an amended bill will be issued which reflects the increase in the service charge or the undercharged amount will be added to the next year's bill. This amended bill will be due and payable as required by KCC 9.08.100. The Division may include in the bill the amount undercharged for two previous billing years in addition to the current bill.
6. Rate adjustment decisions made by the Director (or the Division as delegated by the Director) are final unless within 30 days of the date the decision was mailed, the applicant submits in writing to the Director a notice of appeal setting forth a brief statement of the grounds for appeal and requesting a hearing before the King County hearing examiner. The examiner's decision will be a final decision pursuant to KCC 20.24.080.

2.1 REVIEW AND APPROVAL PROCEDURES FOR DISCOUNT RATE ADJUSTMENTS

In order for a parcel to receive one of the three discounts described in Sections 2.2, 2.3, and 2.4, the Division must make a one-time determination that the parcel is eligible for the discount because it has the *minimum characteristics necessary for the discount* (i.e., the more structural aspects of the conditions required for annual application of the discount as specified in Sections 2.2, 2.3, and 2.4). For the Stormwater Facility Discount, this means that the necessary flow control or water quality treatment facility must be in place and functioning. For the Sixty-Five Ten Discount, this means that the necessary native vegetation must be in place and the full dispersion BMPs must be installed and functioning. For the Pervious Surface Absorption Discount, this means that the necessary flow control BMPs must be installed and functioning.

To determine whether or not a parcel is eligible for one of the three available discounts, the following steps are necessary (*note: a parcel cannot receive more than one of these discounts; therefore, the following steps are not necessary for parcels that have previously received a facility discount unless the parcel owner wishes to switch discounts*):

1. The applicant (i.e., the parcel owner or his or her designee) may contact the Division's Stormwater Services Section at 206-296-1900 to request a site assessment to determine eligibility for a rate adjustment discount. This assessment may require one or more site visits by Division staff. All necessary site visits will be arranged with the applicant in advance of each visit.
2. Within 30 days of the applicant's request, the Division will either complete the site assessment or notify the applicant of the date when the assessment can be completed based on current workload.
3. Upon completion of the site assessment, the Division will contact the applicant and report one of the following determinations:

    a) The parcel is approved as eligible for the discount based on the Division's determination that the minimum characteristics necessary for discount are in place. The discount will be

applied in the calendar year that follows the year in which the characteristics necessary for discount were in place as of November 1st of the earlier year, and provided that all the other conditions required for application of the discount are satisfied within 60 days of the Division's approval notice. Failure to satisfy these conditions within 60 days may result in the discount being delayed to the subsequent calendar year.

b) The parcel is not eligible for this discount and why.

c) The parcel is eligible for this discount if certain improvements, repairs, or other structural measures are implemented to the satisfaction of the Division. For example, the Division may require installation of a missing facility component or dispersion trench, etc.

d) Additional technical information is needed to make a determination of eligibility. For example, to determine eligibility for a Stormwater Facility Discount, the Division may request a technical information report (TIR) prepared by a licensed civil engineer, in accordance with the specifications for TIRs contained in the SWDM. This TIR must include any information deemed necessary by the Division to show that the parcel meets the flow control standard or water quality treatment standard found in the version of the SWDM in effect at the time the request for rate adjustment is received by the Division (see Section 2.2.2 for more specifics on TIRs required to demonstrate eligibility for this discount). To determine eligibility for a Sixty-Five Ten Discount or a Pervious Surface Absorption Discount, the Division may request a topographical survey of the parcel or a portion of the parcel by a licensed civil engineer or a registered land surveyor. If infiltration facilities or BMPs are involved, the Division may also request a soils report prepared by an onsite sewage designer or by a suitably trained person working under the supervision of a licensed civil engineer to verify infiltration rates and function.

4. If additional technical information is requested, the applicant must submit the information within 60 calendar days from the date of the Division's request for information. Failure to meet this turnaround time may result in the discount (if and when approved) being delayed to the subsequent calendar year. If the additional information results in approval, such approval will be granted as described in Step 3.a) above. If the additional information results in the identification of improvements, repairs, or other structural measures necessary for eligibility, see Step 5 below.

5. If improvements, repairs, or other structural measures are identified as necessary for eligibility, these actions must be implemented to the Division's satisfaction before approval is granted as described in Step 3.a) above.

6. Once the parcel is approved as eligible for the discount, the Division will do routine site inspections or spot checks to verify that all conditions required for application of the discount are in fact being met as specified in Sections 2.2, 2.3, and 2.4. Failure to meet these conditions could result in loss of the discount for any given year or years.

2.2 STORMWATER FACILITY DISCOUNT

This discount is applicable to **any developed parcel** (either residential or non-residential) that meets all of the following conditions:

1. The parcel is served by one or more **flow control or water quality treatment facilities** that are *maintained at the expense of the parcel owner*[3] and meet one of the following two conditions:

   a) The facilities (or facility) were required by King County as part of a development permit/approval pursuant to KCC 9.04 and the King County Surface Water Design Manual (SWDM) or predecessor regulations, OR

   b) The facilities (or facility) were not required by King County pursuant to KCC 9.04 and the SWDM but can be demonstrated by the parcel owner to provide flow control or water quality treatment of the parcel's developed area runoff consistent with the *site-specific need*[4] and *performance standards*[5] for such facilities as set forth in KCC 9.04 and the SWDM. To demonstrate this, a technical information report (TIR) prepared by a licensed civil engineer, in accordance with the specifications for TIRs contained in the SWDM, must be submitted to the Division. This TIR must include any information deemed necessary by the Division to show that the parcel meets the flow control standard or water quality treatment standard found in the version of the SWDM in effect at the time the request for rate adjustment is received by the Division (see Section 2.2.2 below for more specifics on TIRs required to demonstrate eligibility for this discount).

2. All flow control and water quality treatment facilities identified in Condition 1 above must be **maintained at the expense of the parcel owner to the King County maintenance standards** specified in Appendix A of the SWDM as verified and approved by the Division. The Division will perform routine inspections to identify maintenance needs and spot checks to verify that these needs are being met pursuant to Appendix A of the SWDM.

3. Any **source control best management practices** (BMPs) applicable to the facilities and business activities occurring on the parcel must be implemented pursuant to KCC 9.12 to prevent contaminants from entering surface water, storm water, or ground water. Applicable BMPs are identified and detailed in a King County publication titled, *Stormwater Pollution Control Manual – Best Management Practices for Businesses* (July 1995). This publication is currently available free of charge for a single copy (additional copies are $10.05 with tax) at the Department of Natural Resources and Parks, Water and Land Resources Division, at 201 South Jackson, Suite 600, Seattle, or by phoning 206-296-6519. The publication can also be accessed on the Internet at http://dnr.metrokc.gov/wlr/dss/spcm.htm. If there are any questions about the application of the BMPs in this publication, technical assistance is available by phoning 206-296-1900.

4. A "**declaration of covenant and grant of easement**" granting King County right of access to the parcel for inspection purposes must be recorded with the King County Office of Records and Elections. A "declaration of covenant and grant of easement form" can be found in Appendix A of these protocols.

---

[3] *Maintained at the expense of the parcel owner* means that maintenance responsibility for the facility lies with the parcel owner or is shared with other owners of parcels served by the same facility. Any facility for which King County has maintenance responsibility cannot be used to qualify for this discount. This means that all residential parcels of subdivisions in which the parcels are collectively served by a King County maintained facility are not eligible for this discount.

[4] *Site-specific need* means that if the facility did not exist, there would be an unacceptable increase in developed area runoff quantity or pollution as set fourth in KCC 9.04 and the SWDM. In other words, if the parcel were to be developed today and found to be exempt from the facility requirement, then there is no *site-specific need* for the facility.

[5] *Site-specific performance standard* means the flow control facility peak/duration-matching discharge criteria or the water quality treatment facility pollutant-removal goal specified for the parcel based on its location and site characteristics.

2.2.1 DISCOUNT AMOUNT

Nonresidential parcels, except those in the "light" category, found by the Division to meet the above conditions in Section 2.2 above will be charged at the rate of one lower rate category than as classified by its percentage of impervious surface coverage. Nonresidential parcels in the "light" category found by the Division to meet the above conditions will be charged at the rate of $102.00/acre/year. Residential parcels and parcels in the "very light" category found by the Division to meet the above conditions will be charged $51.00/parcel/year.

2.2.2 TECHNICAL INFORMATION REPORT (TIR)

This report is required only if the parcel owner requests a Stormwater Facility Discount for a flow control or water quality treatment facility that was **not** required by the County when the parcel was developed or redeveloped.

The TIR must contain all drawings, field information, tests, and calculations deemed necessary by the Division to demonstrate that the parcel meets either the flow control standard or the water quality treatment standard found in the version of the SWDM in effect at the time the request for rate adjustment is received by the Division.

As specified in Section 2.3.1.1 of the SWDM, the TIR must be stamped and dated by a licensed civil engineer registered in the State of Washington and must contain the following **ten sections**, preceded by a table of contents:

1. Project Overview
2. Conditions and Requirements Summary
3. Offsite Analysis
4. Flow Control and Water Quality Facility Analysis and Design
5. Conveyance System Analysis and Design
6. Special Reports and Studies
7. Other Permits
8. ESC Analysis and Design
9. Bond Quantities, Facility Summaries, and Declaration of Covenant and Grant of Easement
10. Operations and Maintenance Manual.

Every TIR must contain each of these sections; however, if a section does not apply, the engineer may simply mark "N/A" with a brief explanation. This standardized format allows a quicker, more efficient review of information required to grant this discount.

The content of each of these sections is specified in the SWDM, Section 2.3.1.1.

2.3 SIXTY-FIVE TEN DISCOUNT

This discount is applicable to **any developed parcel** (either residential or non-residential) that meets all of the following conditions:

1. At least **65% of the parcel is in a forested or native condition**, or 65% or more of the parcel is set aside as forested or native-condition open space by a covenant, tract, or easement. See Section 2.3.2 for more information on forested area/open space restrictions and conditions.
2. The parcel's **measured impervious surface area is no more than 20%** of the parcel area. *Note that this condition essentially precludes application of the Sixty-Five Ten Discount to any parcels in the "moderate" to "very heavy" rate categories*.
3. The parcel's **effective impervious area** (EIA) as defined in these protocols is **no more than 10%** of the parcel area. *Note that parcels in the "very light" category already meet this condition by virtue of being no more than 10% impervious.* For the purposes of applying this limit to parcels in the "light" category or "residential" category, EIA includes all impervious surface area on the parcel except those portions which meet one of the following three conditions:
   a) The impervious surface runoff is "fully dispersed" according to the "full dispersion" Best Management Practices (BMPs) detailed in Section 2.3.3, OR
   b) The impervious surface runoff is fully and reliably infiltrated according to the infiltration standards and BMPs in the SWDM (see Section 2.3.4 for more information), OR
   c) The impervious surface runoff is managed in an alternative way approved by the Division that effectively mitigates all of the hydrologic effects of the impervious surface (i.e., increased runoff peaks, frequencies, volumes, and flashiness, and decreased groundwater recharge).
4. Any **source control best management practices** (BMPs) applicable to the facilities and business activities occurring on the parcel must be implemented pursuant to KCC 9.12 to prevent contaminants from entering surface water, storm water, or ground water. Applicable BMPs are identified and detailed in a King County publication titled, *Stormwater Pollution Control Manual – Best Management Practices for Businesses* (July 1995). This publication is currently available free of charge for a single copy (additional copies are $10.05 with tax) at the Department of Natural Resources and Parks, Water and Land Resources Division, at 201 South Jackson, Suite 600, Seattle, or by phoning 206-296-6519. The publication can also be accessed on the Internet at http://dnr.metrokc.gov/wlr/dss/spcm.htm. If there are any questions about the application of the BMPs in this publication, technical assistance is available by phoning 206-296-1900.
5. A "**declaration of covenant and grant of easement**" granting King County right of access to the parcel for inspection purposes must be recorded with the King County Office of Records and Elections. A "declaration of covenant and grant of easement form" can be found in Appendix A of these protocols.

2.3.1 DISCOUNT AMOUNT

Nonresidential parcels, except those in the "light" category, found by the Division to meet the above conditions will be charged at the rate of one lower rate category than as classified by its percentage of impervious surface coverage. Nonresidential parcels in the "light" category found by the Division to meet the above conditions will be charged at the rate of $102.00/acre/year. Residential parcels and parcels in the "very light" category found by the Division to meet the above conditions will be charged $51.00/parcel/year. **Only one such discount is allowed**. Parcels that qualify for the Stormwater Facility Discount and/or the Pervious Surface Absorption Discount will not be eligible to receive those discounts in addition to this discount.

2.3.2 FORESTED OR NATIVE CONDITION AREA RESTRICTIONS AND CONDITIONS

The following restrictions and conditions apply to the parcel's forested or native condition area used to qualify for the Sixty-Five Ten Discount:

1. The 65% forested or native condition area need not be set aside in an open space covenant, tract, or easement. However, the Division will perform routine inspections or reviews of aerial photos to verify that at least 65% of the parcel is kept in an undisturbed forested or native condition, except as allowed Items 4, 5, and 6 below.
2. On parcels where a previous development permit required 65% of the parcel to be set aside as open space through a covenant, tract, or easement, compliance with the restrictions and conditions of that covenant, tract, or easement is required in order to qualify for the Sixty-Five Ten Discount. The principle restriction on open space areas is the prohibition of removing vegetation and trees.
3. The 65% forested or native condition area may include sensitive areas such as steep slopes and their buffers, wetlands and their buffers, and streams and their buffers. However, only the *unsubmerged portion*[6] of these sensitive areas may be counted towards meeting the minimum requirements for full dispersion in Section 2.3.3.1. For sensitive areas designated under KCC 21A, allowable uses shall be limited to those specified in KCC 21A.24 which are also consistent with Item 5 below.
4. The 65% forested or native condition area may contain utilities and utility easements, including stormwater flow dispersion devices.
5. Timber harvest activities are allowed within the 65% forested or native condition area only under a Division-approved Forest Management Plan. For more information, contact the Division's Office of Rural and Resource Programs forestry staff by phoning 206- 296-6519.
6. The 65% forested or native condition area may be used for passive recreation and related facilities, including pedestrian and bicycle trails, nature viewing areas, fishing and camping areas, and other similar activities that do not require permanent structures, provided that cleared areas and areas of compacted soil associated with these areas and facilities do not exceed 8% of the 65% forested or native condition area. All remaining portions of the area must be kept in an undisturbed condition, except as allowed in Items 4 and 5 above.
7. If any portion of the 65% area is cleared, except as allowed in Items 4, 5, and 6 above, the Sixty-Five Ten Discount will cease to be applicable to the parcel until such time as a restoration plan is approved by the Division and is confirmed to be successfully underway in implementation.
8. Parcel owners who wish to qualify for the Sixty-Five Ten Discount on parcels less than 65% forested or native, must install Division-approved "native-vegetated landscape" as needed to meet the 65% requirement. For more information on "native-vegetated landscape", see Section 3.3.1.2 or call the Division's Stormwater Services Section at 206-296-1900.
9. Forested or native condition open space set aside by covenant, easement, or tract may be eligible for tax benefits through the *Public Benefit Rating System*[7] program. Parcel owners may choose to develop a long-term Forest Management Plan, which may qualify for additional tax relief under the Public Benefit Rating System. The Forest Management Plan should require reforestation of any open space areas that have been previously cleared.

---

[6] *Unsubmerged portion* means the portion outside the ordinary high water line of streams, lakes, and wetlands.

[7] The *Public Benefit Rating System* provides tax credit for properties which preserve 4 acres or more of contiguous open space in rural areas. Additional credits are granted under the forested open space category, provided a Forest Management Plan is developed which, for the purpose of these requirements, shall maintain the open space in a fully forested condition.

2.3.3 FULL DISPERSION BMPS

Full dispersion BMPs are simple techniques for dispersing runoff from impervious surfaces into areas of undisturbed, native vegetation. The techniques take advantage of the significant absorptive capacity of the top layer of undisturbed, native soil with its extensive ground litter, dense shrubs, and root voids. The intent of such BMPs is to facilitate the absorption of runoff from target impervious surfaces to the extent sufficient to eliminate the runoff effect of those surfaces relative to the native condition of the area occupied by those and other developed surfaces. Such BMPs are only applicable to a parcel or "threshold discharge area" (see Section 4.0 for a definition of this term) within a parcel that contains 65% or more of undisturbed, native vegetation.

2.3.3.1 MINIMUM REQUIREMENTS FOR FULL DISPERSION

The runoff from any impervious surface is considered "fully dispersed" (i.e., at or approaching zero percent effective imperviousness) if all of the following minimum requirements are met:

1. The **total impervious surface area** being fully dispersed within the same "threshold discharge area" (see Section 4.0 for a definition of this term) **must not exceed 15% of the total area of undisturbed, native vegetation** within the threshold discharge area.
2. A **native-vegetated flowpath segment of at least 100 feet** in length must be available along the flowpath that runoff would follow upon discharge from a dispersion device (e.g., splash block, dispersion trench, etc.). The "native-vegetated flowpath segment" **must meet all of the following criteria:**
   a) The flowpath segment must be through undisturbed, native vegetation.
   b) The flowpath segment must be contained within the parcel or an off-parcel tract or easement area reserved for such dispersion.
   c) The slope of the flowpath segment must be no steeper than 15% for any 20-foot reach of the flowpath segment.
   d) The flowpath segment must be located between the dispersion device and any downstream drainage feature such as a pipe, ditch, stream, river, pond, lake, or wetland.
   e) The flowpath segment must not intersect with another native-vegetated flowpath segment. Note: the design criteria for some dispersion devices may require a minimum spacing at the downstream end of the native-vegetated flowpath segment to increase spreading of flows.

   Note: Runoff may be conveyed to an area meeting these flowpath criteria
3. The impervious surface runoff must be dispersed using one of the following **dispersion devices** according to the design specifications for the device as set forth in Section 2.3.3.2:
   a) Splash blocks
   b) Rock pads
   c) Dispersion trenches
   d) Sheet flow
4. On **sites with septic systems**, the discharge of runoff from dispersion devices must not be upgradient of the drainfield. This requirement may be waived by the Division if site topography clearly prohibits flows from intersecting the drainfield.
5. The dispersion of runoff must not create **flooding or erosion impacts** as determined by the Division. If runoff is proposed to be discharged toward a landslide hazard area, erosion hazard area, or steep slope hazard area (i.e., slopes steeper than 20%), the Division may require the parcel owner to have the proposal evaluated by a geotechnical engineer or qualified geologist.

2.3.3.2 DESIGN SPECIFICATIONS FOR FULL DISPERSION DEVICES

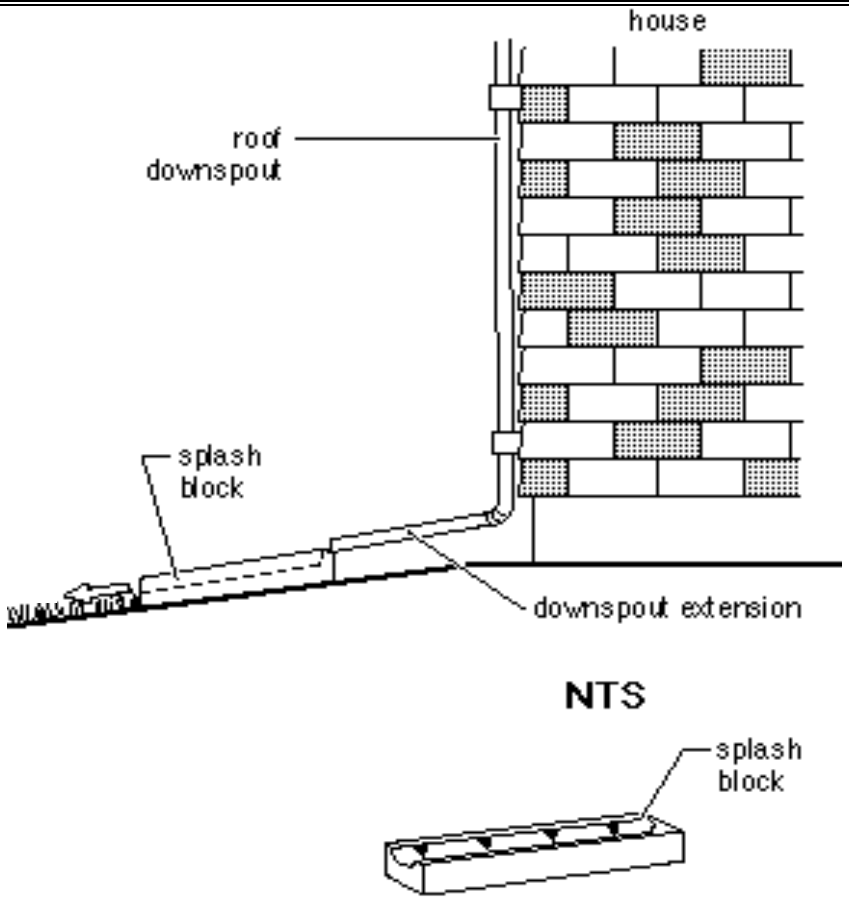
A SPLASH BLOCKS

Splash blocks such as that shown in Figure 2.3.3.2.A (below) may be used to discharge small amounts of the concentrated runoff from a roof downspout.

Design Specifications

1. No more than 700 square feet of roof area may be drained to a single splash block unless the "native-vegetated flowpath segment" is longer than the 100-foot minimum length specified in Minimum Requirement 2 of Section 2.3.3.1.
2. A maximum roof area of 1,400 square feet may be discharged to a single splash block if the "native-vegetated flowpath segment" is at least 200 feet in length. *Note: for roof areas larger than 700 square feet, the splash block should be located away from building or other provisions should be made to prevent flooding/erosion problems.*
3. For between 700 square feet and 1,400 square feet of roof area, the length of the flowpath segment may vary proportionally between 100 and 200 feet.
4. For purposes of maintaining adequate separation of flows discharged from adjacent dispersion devices, the "native-vegetated flowpath segment" for the splash block must have at least 50 feet of separation from an adjacent flowpath segment at the downstream end of whichever segment is the shorter.

FIGURE 2.3.3.2.A TYPICAL SPLASH BLOCK



B ROCK PADS

Pads of crushed rock, 2 feet wide (perpendicular to flow) by 3 feet long by 6 inches deep, may be used to discharge small amounts of concentrated runoff from any type of impervious surface.

Design Specifications

1. No more than 700 square feet of impervious area may be drained to a single rock pad unless the "native-vegetated flowpath segment" is longer than the 100-foot minimum length specified in Minimum Requirement 2 of Section 2.3.3.1.
2. A maximum impervious area of 1,400 square feet may be discharged to a single rock pad if the "native-vegetated flowpath segment" is at least 200 feet in length.
3. For between 700 square feet and 1,400 square feet of impervious area, the length of the flowpath segment may vary proportionally between 100 and 200 feet.
4. For purposes of maintaining adequate separation of flows discharged from adjacent dispersion devices, the "native-vegetated flowpath segment" for the rock pad must have at least 50 feet of separation from an adjacent flowpath segment at the downstream end of whichever segment is the shorter (see Figure 2.3.3.2.B, p. 17).

C DISPERSION TRENCHES

The two types of dispersion trenches shown in Figure 2.3.3.2.C (p. 18) and Figure 2.3.3.2.D (p. 19) may be used to spread the discharge of concentrated runoff from any type of impervious surface.

General Design Specifications

1. All dispersion trenches are filled with ¾-inch to 1½-inch washed rock.
2. All trenches must be placed at least 10 feet from any building and must be as parallel as possible to the contour of the ground.
3. For purposes of maintaining adequate separation of flows discharged from adjacent dispersion devices, the outer edge of the "native-vegetated flowpath segment" must have at least 50 feet of separation from the adjacent flowpath segment at the downstream end of whichever segment is the shorter.

Design Specifications for Simple 10-Foot Trench

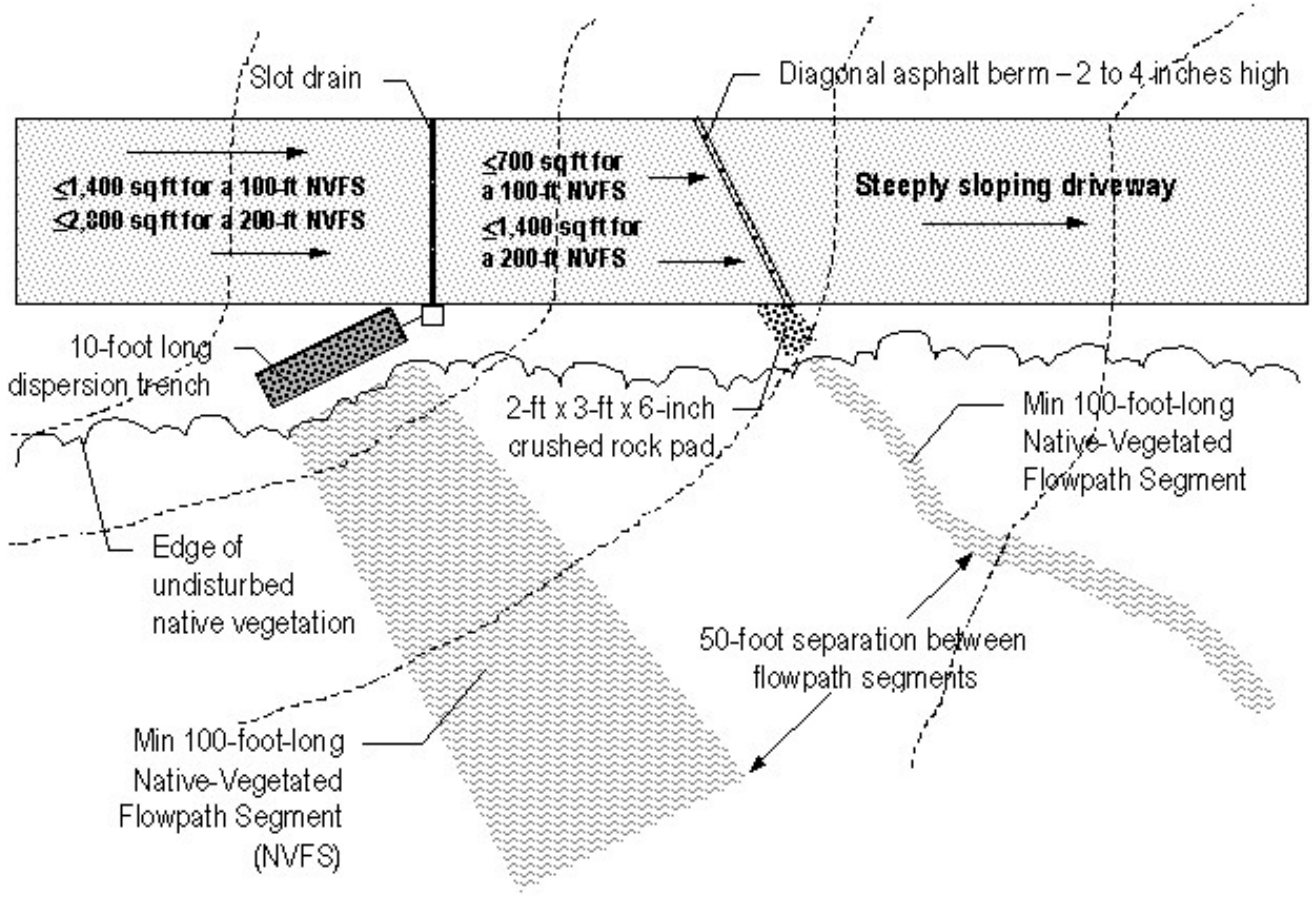
1. The simple 10-foot-long trench illustrated in Figure 2.3.3.2.B (p. 17) and Figure 2.3.3.2.C (p. 18) must be at least 2-feet-wide by 18-inches deep.
2. The 10-foot trench length is the maximum allowed without a notch grade board as shown in Figure 2.3.3.2.D (p. 19).
3. No more than 1,400 square feet of impervious area may be drained to a single 10-foot trench unless the "native-vegetated flowpath segment" is longer than the 100-foot minimum length specified in Minimum Requirement 2 of Section 2.3.3.1.
4. A maximum impervious area of 2,800 square feet may be drained to a single 10-foot trench if the "native-vegetated flowpath segment" is at least 200 feet in length.
5. For between 1,400 square feet and 2,800 square feet of impervious area, the length of the flowpath segment may vary proportionally between 100 and 200 feet.

Design Specifications for 50-Foot Trench with Notch Grade Board

1. The 50-foot-long trench with notch grade board detailed in Figure 2.3.3.2.D (p. 19) must be at least 2-feet wide by 24-inches deep.

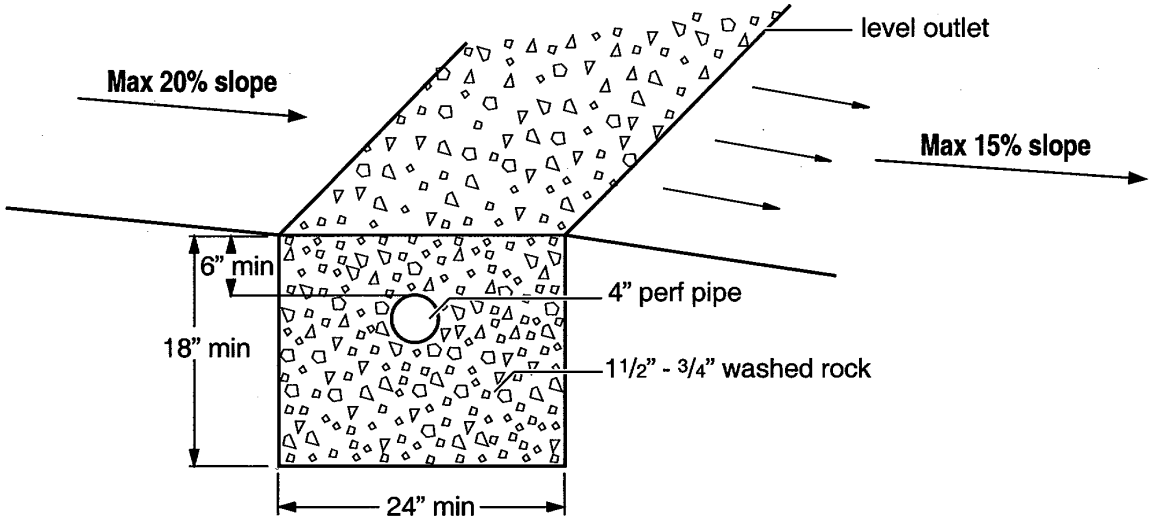
2. The 50-foot trench length is the longest allowed.
3. No more than 5,000 square feet of impervious area may be drained to a single 50-foot trench unless the "native-vegetated flowpath segment" is longer than the 100-foot minimum length specified in Minimum Requirement 2 of Section 2.3.3.1.
4. A maximum impervious area of 10,000 square feet may be drained to a single 50-foot trench if the "native-vegetated flowpath segment" is at least 200 feet in length.
5. For between 5,000 square feet and 10,000 square feet of impervious area, the length of the flowpath segment may vary proportionally between 100 and 200 feet for a 50-foot trench. The trench length may also vary proportionally between the 10-foot trench values above and the 50-foot values given here.
6. Manifolds may be used to split flows between up to four 50-foot trenches.

FIGURE 2.3.3.2.B DRIVEWAY APPLICATION OF DISPERSION TRENCH AND ROCK PAD



PLAN VIEW OF DRIVEWAY
NTS

FIGURE 2.3.3.2.C 10-FOOT DISPERSION TRENCH CROSS-SECTION AND ROOF APPLICATION



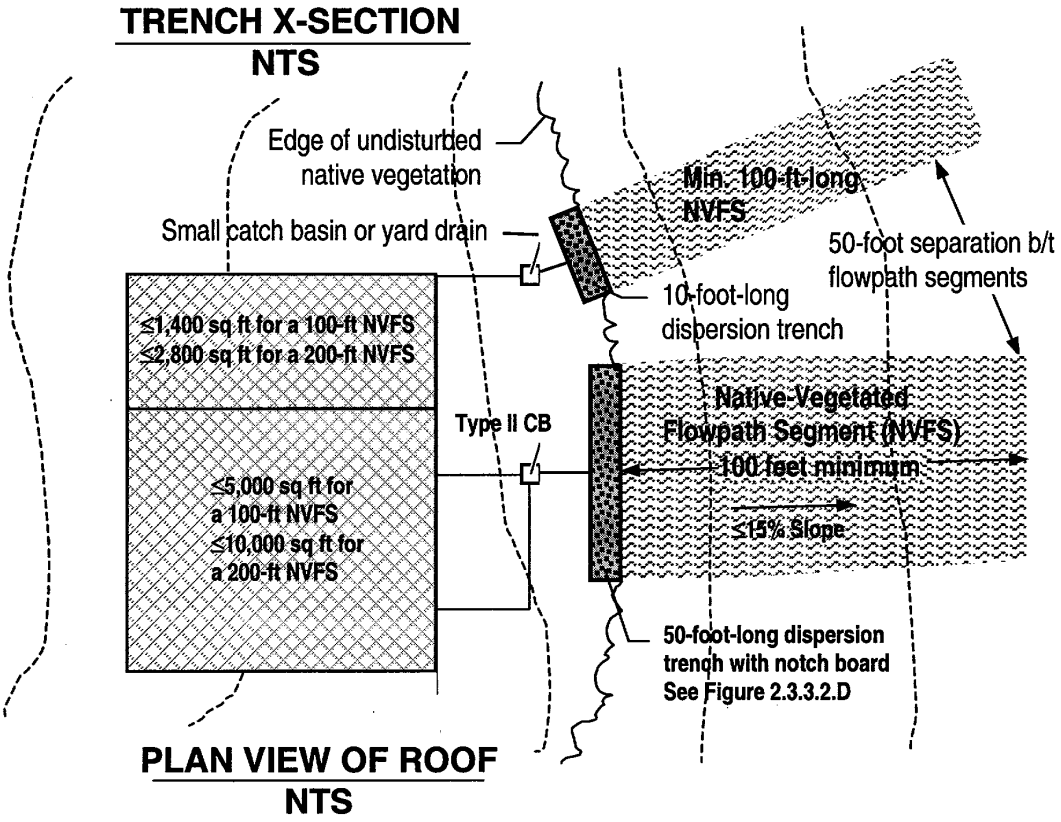
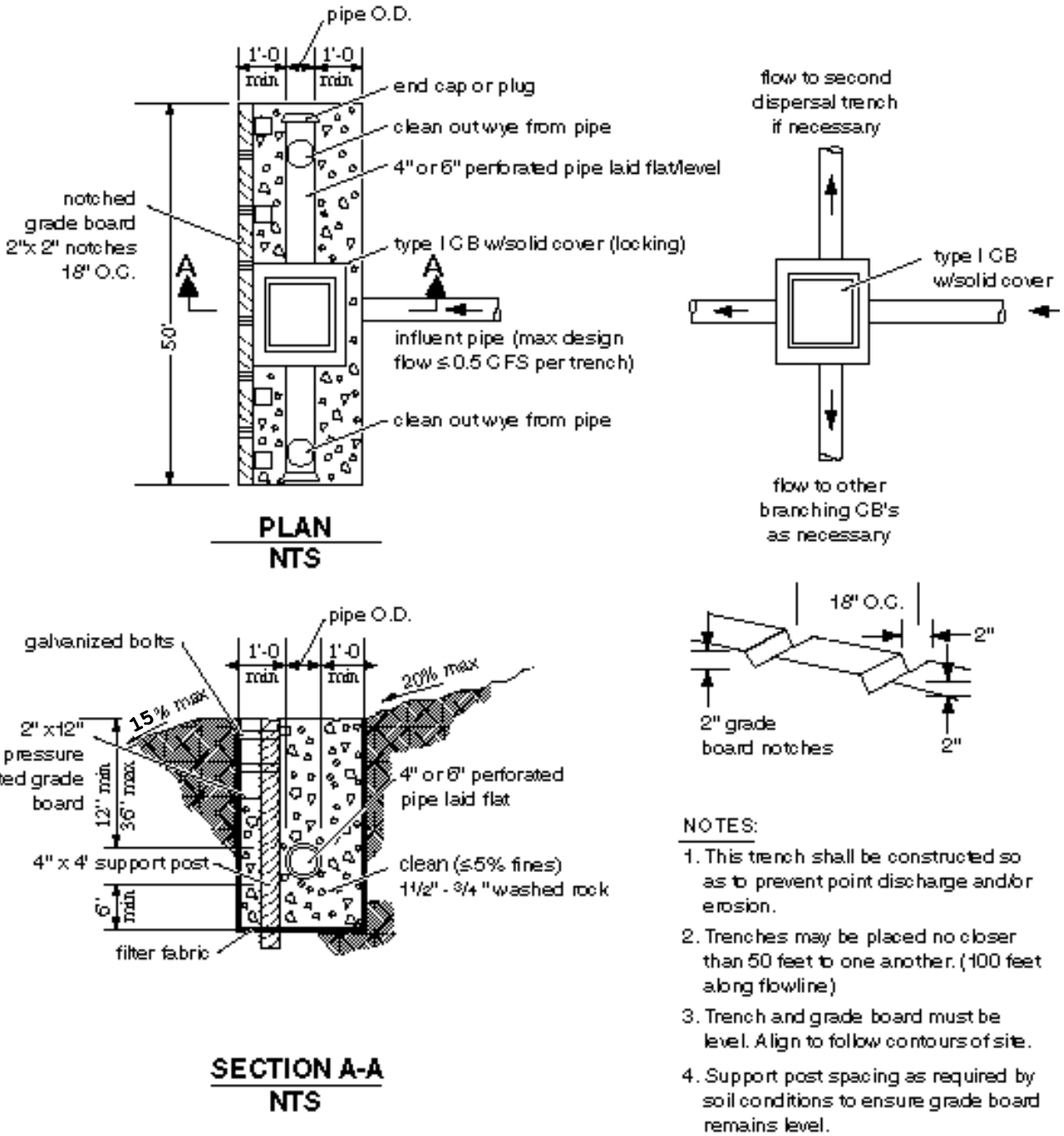


FIGURE 2.3.3.2.D 50-FOOT DISPERSION TRENCH WITH NOTCHED BOARD



NOTES:

1. This trench shall be constructed so as to prevent point discharge and/or erosion.
2. Trenches may be placed no closer than 50 feet to one another. (100 feet along flowline)
3. Trench and grade board must be level. Align to follow contours of site.
4. Support post spacing as required by soil conditions to ensure grade board remains level.

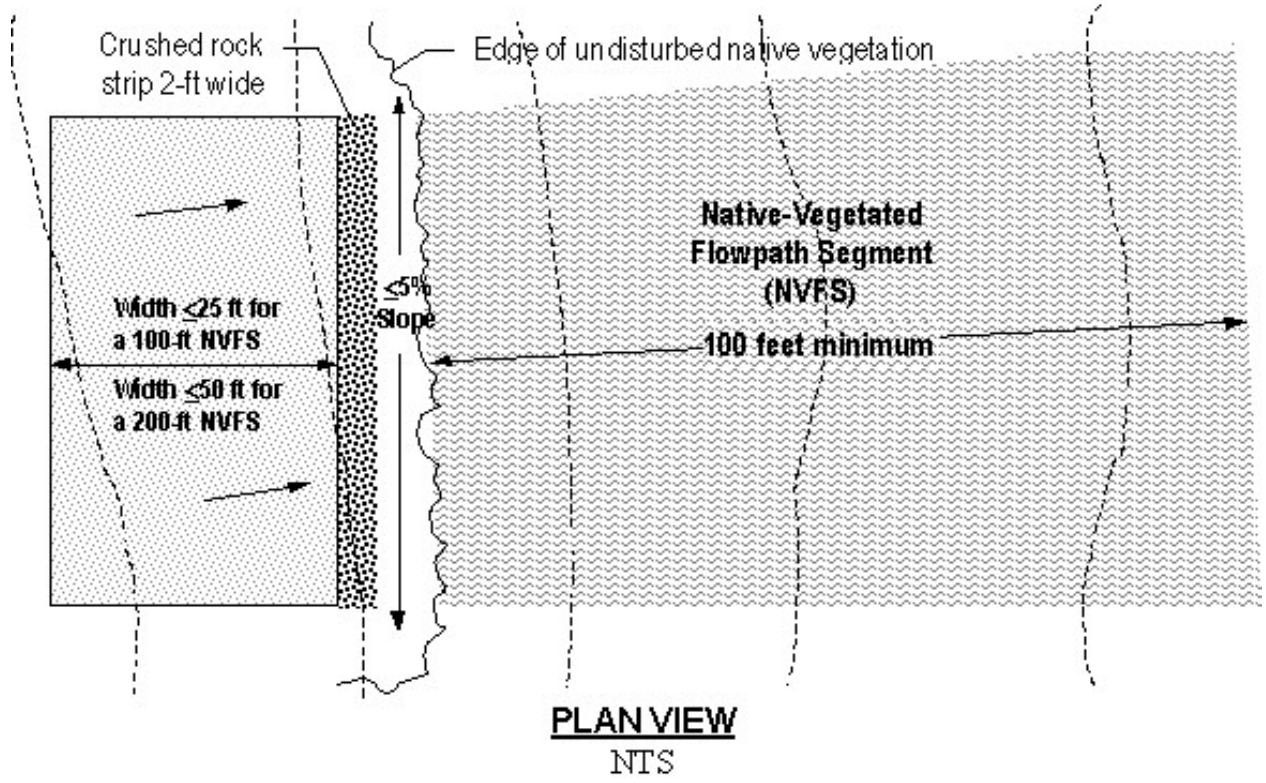
D SHEET FLOW

Allowing the runoff from a strip of impervious area to sheet flow off its edge as shown in Figure 2.3.3.2.E (below) may be used where the edge of the impervious strip and the adjacent ground is level to moderately sloped (≤5%).

Design Specifications

1. A 2-foot-wide, 4-to-6 inch-deep, strip of crushed rock or the extended base course of a road or driveway must be provided at or below the edge of the impervious strip to facilitate dispersal of runoff.
2. The slope of the ground adjacent to the edge of the impervious strip must be 5% or flatter.
3. No more than a 25-foot-wide strip of impervious surface may be sheet flowed in this manner unless the "native-vegetated flowpath segment" is longer than the 100-foot minimum length specified in Minimum Requirement 2 of Section 2.3.3.1.
4. A maximum 50-foot-wide strip may be sheet flowed if the flowpath segment is at least 200 feet in length.
5. For strip widths of between 25 and 50 feet, the length of the flowpath segment may vary proportionally between 100 and 200 feet in length.
6. For purposes of maintaining adequate separation of flows discharged from adjacent dispersion devices, the outer edge of the "native-vegetated flowpath segment" (assumed to have a width equal to the length of impervious strip being sheet flowed) must have at least 50 feet of separation from the adjacent flowpath segment at the downstream end of whichever segment is the shorter.

FIGURE 2.3.3.2.E APPLICATION OF SHEET FLOW DISPERSION



2.3.4 INFILTRATION STANDARDS AND BMPS

Any impervious surface from which the runoff is "fully and reliably" infiltrated is considered to be non-effective impervious surface for the purposes of applying the Sixty-Five Ten Discount. "Fully infiltrated" means the stormwater from all runoff events up to and including the 100-year event is soaked into the ground. "Reliably infiltrated" means that soil conditions are favorable enough to assure that the device used to soak water into the ground (e.g., infiltration trench, drywell, etc.) will perform as expected for a reasonable number of years before having to be replaced. The majority of soil in King County is underlain by a compacted layer of soil (i.e., glacial till) which severely limits soaking capacity and makes full infiltration impracticable, cost prohibitive, unreliable, or all three.

In order for an impervious area to be considered non-effective impervious surface, its runoff must be directed to an infiltration facility or BMP required by a previous development permit pursuant to KCC Chapter 9.04 and the King County Surface Water Design Manual (SWDM), or demonstrated to be consistent with the design standards and specifications for such facilities and BMPs in the SWDM. The infiltration facility or BMP must also be maintained at the parcel owner's expense to the King County maintenance standards specified in Appendix A of the SWDM as verified and approved by the Division. The Division will perform routine inspections and/or spot checks to identify maintenance needs and verify that these needs are being met pursuant to Appendix A of the SWDM.

If infiltration facilities or BMPs were not required by a previous development permit, the parcel owner must demonstrate that the impervious area runoff is infiltrated consistent with the design standards for infiltration facilities in Section 5.4 of the SWDM, or the design specifications for infiltration trenches and drywells in Section C.2.3 of Appendix C, *Small Site Drainage Requirements*, of the SWDM. To demonstrate this, a soils report prepared by an onsite sewage designer or by a suitably trained person working under the supervision of a licensed civil engineer must be submitted to demonstrate compliance with the current adopted design specifications in effect at the time the request for rate adjustment is received by the Division.

2.4 PERVIOUS SURFACE ABSORPTION DISCOUNT

This discount is applicable to **any developed non-residential parcel** that meets all of the following conditions:

1. The parcel does not qualify for the Stormwater Facility Discount in Section 2.2 or the Sixty-Five Ten Discount in Section 2.3.
2. **At least 10% of the parcel's total impervious area is served by one or more of the flow control BMPs** listed in Section 2.4.2 and the Division has determined that these BMPs are functioning in compliance with the design specifications for such BMPs in the King County Surface Water Design Manual (SWDM), Appendix C, *Small Site Drainage Requirements*. To determine compliance with BMP specifications, the Division may require the parcel owner to provide certain technical information such as a soils report prepared by an onsite sewage designer or by a suitably trained person working under the supervision of a licensed civil engineer to verify infiltration rates.
3. Any **source control best management practices** (BMPs) applicable to the facilities and business activities occurring on the parcel must be implemented pursuant to KCC 9.12 to prevent contaminants from entering surface water, storm water, or ground water. Applicable BMPs are identified and detailed in a King County publication titled, *Stormwater Pollution Control Manual – Best Management Practices for Businesses* (July 1995). This publication is currently available free of charge for a single copy (additional copies are $10.05 with tax) at the Department of Natural Resources and Parks, Water and Land Resources Division, at 201 South Jackson, Suite 600, Seattle, or by phoning 206-296-6519. The publication can also be accessed on the Internet at http://dnr.metrokc.gov/wlr/dss/spcm.htm. If there are any questions about the application of the BMPs in this publication, technical assistance is available by phoning 206-296-1900.
4. A "**declaration of covenant and grant of easement**" granting King County right of access to the parcel for inspection purposes must be recorded with the King County Office of Records and Elections. A "declaration of covenant and grant of easement form" can be found in Appendix A of these protocols.

2.4.1 DISCOUNT AMOUNT

Nonresidential parcels found by the Division to meet the above conditions will receive up to a maximum 25% discount based on the percentage of total impervious area served by the flow control BMPs listed in Section 2.4.2. The table below will be used to determine the amount of discount applied based on this impervious area percentage.

Percent of Total Impervious Area served by the Flow Control BMPs in Section 2.4.2	**Rate Discount**
≥75%	25%
≥50% and <75%	20%
≥25% and <50%	15%
≥10% and <25%	10%
<10%	0%

2.4.2 APPLICABLE FLOW CONTROL BMPS

The flow control BMPs applicable to this discount are simple designs for infiltrating impervious surface runoff into the ground or dispersing it onto and over pervious, vegetated surfaces to maximize the absorption of runoff before discharging it from the parcel. Maximizing absorption helps to minimize the losses in groundwater recharge and increases in runoff volume typically created by conversion of pervious surfaces to impervious surfaces. These BMPs are already required on many new developments through application of the King County Surface Water Design Manual to projects that require a County permit.

Flow Control BMPs Applicable to Pervious Surface Absorption Discount:

a) **Infiltration trenches and drywells** – See SWDM, Appendix C, Section C.2.3 for design specifications.

b) **Splash blocks** – See SWDM Appendix C, Section C.2.4.1 for design specifications.

c) **Dispersion of concentrated flows** – See SWDM Appendix C, Section C.2.4.2 for design specifications

d) **Dispersion trenches** – See SWDM Appendix C, Section C.2.4.3 for design specifications.

e) **Sheet flow** – See SWDM Appendix C, Section C.2.4.4 for design specifications.

SECTION 3.0 GRANT PROGRAM FOR REDUCING IMPERVIOUS SURFACE

The recent listing of Puget Sound Chinook salmon as threatened under the Endangered Species Act has elevated the need to better address the ever increasing stormwater impacts of urbanization on these and other salmonid species. There is clear science indicating that a root cause of degraded salmonid habitat is flow regimes that have been altered from the natural state by increases in impervious surfaces. Numerous scientific investigations of biological indicators and stream morphology have shown that as impervious area increases in a watershed, the biological health of the stream system declines. Increases in impervious surface result in excessively high flows in wet seasons and extremely low base flows in dry seasons. Such changes in flows can significantly impact in-stream water quality and habitat functions essential to salmonid spawning, rearing, and migration. In addition, these changes in flows can cause flooding of homes and businesses, severe erosion and sedimentation damage to public and private property, and life-threatening landslides.

Conventional stormwater facilities, required on all new developments, are able to mitigate only a portion of these impacts. Other measures must be taken to reduce the impacts of impervious surfaces.

To provide incentive for reduction of impervious surfaces, a grant program is available for non-residential parcel owners who wish to reduce their impervious surface area and possibly qualify for a corresponding reduction in their annual SWM fee.

Two types of grants are available as described in this section. One provides a share of the cost to convert existing impervious surface to Division-approved pervious surface or to a Division-approved alternative surface that behaves like pervious surface in terms of runoff impacts. This type of grant is described in Section 3.1, "Cost-Share Program for Reducing Impervious Surface" (below). The other type of grant gives a credit for conversion of existing impervious surface to a Division-approved alternative surface that behaves like pervious surface in terms of runoff impacts (See Section 3.2, "Impervious Surface Reduction Credits".

3.1 COST-SHARE PROGRAM FOR REDUCING IMPERVIOUS SURFACE

Each calendar year, the Division sets aside capital improvement funding to assist parcel owners who wish to reduce their impervious surface by converting it to a Division-approved pervious surface or to a Division-approved "alternative surface" that behaves like pervious surface. This funding is a finite amount that is allocated on a first-come-first-serve basis to cost-share proposals approved by the Division in accordance with the requirements, specifications, and procedures described in this section. The choices for cost-share funding include conversion to (1) **compost-amended lawn**, (2) **native-vegetated landscape**, or (3) **grassed modular grid pavement**.

The minimum requirements for participating in this program are listed in Section 3.1.1 below. As specified in subsequent Section 3.1.2, the maximum allowable cost-share for any parcel varies according to the type of impervious surface reduction measure or alternative surface implemented. There are two types of "impervious surface reduction measures" and one type of "alternative surface" eligible for cost-share funding. The reduction measures are conversion to "compost-amended lawn", and conversion to "native-vegetated landscape". The alternative surface is "grassed modular grid pavement". The characteristics, benefits, and design specifications of these measures/surfaces are described in Section 3.3. Application and approval procedures for the cost-share program are described in Section 3.1.3.

Any reduction in SWM fee associated with the conversion of impervious surface to compost-amended lawn or native-vegetated landscape will be applied in the calendar year following the year in which the impervious surface was removed and the underlying soil was broken up per design specifications, so long as such actions were completed by November 1st of the earlier year. Any reduction in SWM fee associated with the conversion of impervious surface to grassed modular grid pavement will be applied as specified in Section 3.2, "Impervious Surface Reduction Credits".

3.1.1 MINIMUM REQUIREMENTS FOR COST-SHARES

1. The parcel must be a **developed non-residential parcel**.
2. An application for cost sharing must be approved by the Division before work is started. All measures proposed for converting impervious surface to a Division-approved pervious surface or alternative surface must have **prior approval of the parcel owner** if the applicant is not the parcel owner.
3. **All measures proposed for cost-share must be consistent with the design specifications** for the impervious surface reduction measures and alternative surfaces detailed in Section 3.3 and must not violate any applicable King County codes/rules such as those governing minimum parking requirements, minimum roadway widths, fire lanes, etc.
4. Any **permits or variances** necessary to implement the cost-share proposal are the sole responsibility of the applicant and must be obtained prior to starting work.
5. A "**declaration of covenant and grant of easement**" granting King County right of access to the parcel for inspection purposes must be recorded with the King County Office of Records and Elections. A "declaration of covenant and grant of easement form" can be found in Appendix A of these protocols.
6. The **parcel owner must agree to maintain** the approved pervious surface or alternative surface created by the cost-share project for at least **10 years** from the "final approval" date.
7. The parcel owner must **agree to reimburse King County its share of cost-share money** granted in the event the parcel owner removes, alters, or fails to maintain the pervious surface or alternative surface created by the cost-share project for a period of at least 10 years from the "final approval" date. Failure to do so may result in the Division filing a lien for reimbursement of the cost-share money or withholding a SWM fee discount applicable to the parcel.
8. **Work must begin within 6 months** and be **completed within 12 months** from the date of "notice of funding approval" date (see Section 3.1.3 for an explanation of the "notice of funding approval"). Failure to do so will result in loss of funding approval if there are other proposals waiting for funding.
9. **Accurate records** must be maintained for equipment hired and/or materials purchased.
10. No funds will be disbursed until all **receipts** have been submitted to the Division and it has been determined that the approved measures for reducing impervious surface have been installed in accordance with the Division's "preliminary approval" of such measures (see Section 3.1.3 for an explanation of "preliminary approval").
11. Cost-share proposals will not be approved on any parcel where King County has identified a **violation of King County code** that has not yet been corrected.
12. Any **source control best management practices** (BMPs) applicable to the facilities and business activities occurring on the parcel must be implemented pursuant to KCC Chapter 9.12 to prevent contaminants from entering surface water, storm water, or ground water. Applicable BMPs are identified and detailed in a King County publication titled, *Stormwater Pollution Control Manual – Best Management Practices for Businesses* (July 1995). This publication is currently available free of charge for a single copy (additional copies are $10.05 with tax) at the Department of

Natural Resources and Parks, Water and Land Resources Division, at 201 South Jackson, Suite 600, Seattle, or by phoning 206-296-6519. The publication can also be accessed on the Internet at http://dnr.metrokc.gov/wlr/dss/spcm.htm. If there are any questions about the application of the BMPs in this publication, technical assistance is available by phoning 206-296-1900.

3.1.2 MAXIMUM ALLOWABLE COST-SHARES FOR IMPERVIOUS SURFACE REDUCTION MEASURES

The following cost-share amounts are for construction only. They do not include any costs necessary for engineering, landscape design, or permits.

Conversion to Compost-Amended Lawn

The maximum allowable cost-share amount for converting impervious surface to compost-amended lawn consistent with the minimum requirements in Section 3.1.1 above and the design specifications in Section 3.3.1.1 below is 50% of the total cost up to a maximum County share of $20,000 and a unit cost-share not to exceed $0.50 per square-foot of impervious area converted in this manner.

Conversion to Native-Vegetated Landscape

The maximum allowable cost-share amount for converting impervious surface to native-vegetated landscape consistent with the minimum requirements in Section 3.1.1 above and the design specifications in Section 3.3.1.2 below is 50% of the total cost up to a maximum County share of $20,000 and a unit cost-share not to exceed $1.00 per square-foot of impervious area converted in this manner.

Conversion to Grassed Modular Grid Pavement

The maximum allowable cost-share amount for converting impervious surface to grassed modular grid pavement consistent with the minimum requirements in Section 3.1.1 above and the design specifications in Section 3.3.2.1 below is 50% of the total cost up to a maximum County share of $20,000 and a unit cost-share not to exceed $1.60 per square-foot of impervious area converted in this manner.

NOTE: The above cost-share amounts are for 2002. The funding availability, lifetime maximum, allowable measures, and cost-share percentage for this program are subject to change without notice. However, every effort will be made to alert program participants and prospective applicants in advance of any such changes.

3.1.3 REVIEW AND APPROVAL PROCEDURES FOR IMPERVIOUS SURFACE REDUCTION COST-SHARES

To apply for an impervious surface reduction cost-share from King County, the following steps are necessary (*note, the Division's Stormwater Services Section at 206-296-1900 is available to answer questions or provide technical assistance on these procedures*):

1. The applicant (i.e., the parcel owner, or his or her designee) submits a request form (Appendix B) to the Division for approval of a cost-share proposal to implement a conversion of impervious surface to a Division-approved pervious surface or alternative surface as described in Section 3.1 above. The following items must be submitted with the request form:

    a) A **plot plan** of the parcel showing the location(s), size(s), and type(s) of "impervious surface reduction measure" or "alternative surface" proposed plus the information specified in Section 3.1.3.1 below. This plan may be prepared by the applicant or applicant's contractor. The plan need not be prepared by an engineer.

b) A written **description** of the cost-share proposal, including the "impervious surface reduction measure" or "alternative surface" to be used, its area, and its estimated installation cost.

c) Any relevant **technical information** that is available or has been prepared in support of the proposal such as topographic survey, soils reports, contractor bids, original drainage plans, engineering reports, approved permits, etc.

2. The Division will do a preliminary review of the submittal within 60 days to determine if there are any conflicts or inconsistencies with King County Code or other applicable regulations. This will require one or more site visits by Division staff. Notice will be given to the applicant in advance of each visit. The Division may also request additional necessary information, in which case, the 60-day clock will stop until the Division receives the requested information.

3. The findings of the preliminary review will be sent to the applicant shortly after the 60-day review period. If major conflicts or inconsistencies are identified, the applicant's proposal will be denied and a "notice of denial" and the proposal will be returned to the applicant to resolve (if resolvable). In some cases, resolution of the conflict or inconsistency will require obtaining a permit or a zoning variance for the proposal, after which the proposal must be resubmitted.

4. If no conflicts or inconsistencies are identified, the applicant's proposal will be given either "preliminary approval" or "preliminary approval with conditions". The Division will contact the applicant and give "notice of preliminary approval". If adequate funding is available at this point, the applicant will also be given "notice of funding approval", which will indicate the approved amount of the County's cost-share. If adequate funding is not available (i.e., it is all committed for the current calendar year), then the proposal will be put on a list of cost-share proposals awaiting "funding approval". *Note: all proposals for cost-share will be eligible for funding in the order of the date they were originally submitted or resubmitted (in the case of a returned proposal) to the Division.*

5. Upon receiving "notice of funding approval", the applicant must obtain all necessary permits and record a "declaration of covenant and grant of easement" (if one does not already exist) as specified by the minimum requirements in Section 3.1.1. Once these items have been completed, the applicant must provide notice to the Division of when construction work will begin and end. The Division may inspect the project during construction, depending on which reduction measure/alternative surface is being implemented.

6. The applicant will have 6 months from the "notice of funding approval" date to obtain necessary permits and begin construction of the proposed reduction measure/alternative surface. Failure to do so will result in loss of funding commitment if other proposals are waiting to be funded.

7. Construction/installation of the proposed reduction measure/alternative surface must be completed within 12 months of the "notice of funding approval" date and in accordance with the Division's "preliminary approval".

8. Upon completion of construction/installation, the Division must inspect the new reduction measure/alternative surface within 30 days. If satisfactory, the Division will send a "notice of final approval", which will include a check for reimbursement of the approved cost-share amount. If not satisfactory, the applicant must correct any deficiencies before receiving "final approval" and cost-share reimbursement.

9. Any reduction in SWM fee associated with the conversion of impervious surface to compost-amended lawn or native-vegetated landscape will be applied in the calendar year following the year in which the impervious surface was removed and the underlying soil was broken up per design specifications, so long as such actions were completed by November 1st of the earlier year. Any reduction in SWM fee associated with the conversion of impervious surface to grassed modular grid pavement will be applied as specified in Section 3.2, "Impervious Surface Reduction Credits".

3.1.3.1 PLOT PLAN SPECIFICATIONS

The plot plan should be drawn on 8½" x 11", 8½" x 14", or 11" x 17" paper and must include the following information:

Identification

- Name, address, and phone number of applicant
- Name and phone number of the person that prepared the plan if not the applicant
- Scale—use a scale that clearly illustrates drainage features and flow controls (1"=20' is standard scale; minimum acceptable scale is 1"=50')
- Parcel number/legal description
- North arrow
- Dimension of all property lines, easements, and building setback lines
- Street names and existing or proposed property address

Building and Site Development Features

- Footprint of all existing impervious buildings
- Location of any existing retaining walls and rockeries
- All existing parking and driveways
- All other existing impervious surfaces
- Existing septic system, including all system components and both primary and reserve drainfields
- Utility structures (poles, fire hydrants, etc.)

Topography

- If over 15% slope: show 5-foot contours, top of slope, and toe of slope.

Sensitive Areas and Drainage Features

- Location of all existing ditches, swales, pipes, or other stormwater facilities
- All streams, wetlands, lakes, closed depressions, or other water features (including any required buffer widths)

Proposed Erosion and Sediment Control

- Type and location of erosion control measures (see Section C.3 of the SWDM, Appendix C, *Small Site Drainage Requirements*).
- Location of any significant offsite drainage features within 200 feet of the discharge point(s) for the lot, including streams, lakes, roadside ditches.

3.2 IMPERVIOUS SURFACE REDUCTION CREDITS

The actual impervious surface area as measured by the Division and used to assign a parcel to a rate category may be reduced through application of an "impervious surface reduction credit". Such credit may be granted by the Division for implementation of an approved "alternative surface" which makes what is otherwise defined as impervious surface behave like pervious surface in terms of runoff impacts. The intent of the credit is to provide incentive to parcel owners to use Division-approved "alternative surfaces" which provide most if not all of the impact mitigation benefits of converting an impervious surface to a pervious surface.

There are currently two "**alternative surfaces**" that qualify for an "impervious surface reduction credit". These surfaces and their credits are as follows:

1. **Grassed modular grid pavement** – Reduction credit: 100%
2. **Vegetated roof** – Reduction Credits: 90% for 3 inches of soil storage[8]
   60% for 2 inches of soil storage
   30% for 1 inch of soil storage

The reduction credit is applied as a percentage of the total area of the "impervious surface reduction measure". For example, if the parcel's total actual impervious area, as measured by the Division, is 4.0 acres and 1.0 acres was converted to vegetated roof with 1 inch of soil storage (qualifies for a 30% credit), then 0.3 acres may be subtracted from 4.0 acres to arrive at an adjusted total impervious area of 3.7 acres. This adjusted amount is then used by the Division to determine the rate category for the parcel.

An "impervious surface reduction credit" may be granted in addition to one of the discounts described in Sections 2.2, 2.3, and 2.4.

Any reduction in SWM fee associated with an impervious surface reduction credit will be applied in the calendar year following the year in which the "alternative surface" eligible for a credit was in place per the design specifications in Section 3.3.2 as of November 1st of the earlier year.

3.2.1 MINIMUM REQUIREMENTS FOR CREDITS

1. **If the alternative surface is already in place**, the parcel owner must demonstrate that the surface was constructed/implemented in accordance with the design specifications for such surface in Section 3.3.2 below. To demonstrate this, the Division may require submittal of construction plans, receipts, inspection documentation, soils reports, engineering reports, design details, landscape plans, as-built information, etc. *Ideally, it is best to request the Division's involvement during the construction/implementation of these measures. This can be done by phoning the Division's Stormwater Services Section at 206-296-1900.*
2. The parcel's **alternative surface must not be in violation** of any applicable King County codes/rules such as those governing minimum parking requirements, minimum roadway widths, fire lanes, etc. If such a violation exists, the parcel owner is responsible for correcting it and obtaining any necessary permits or variances.
3. Any **source control best management practices** (BMPs) applicable to the facilities and business activities occurring on the parcel must be implemented pursuant to KCC 9.12 to prevent contaminants from entering surface water, storm water, or ground water. Applicable BMPs are

[8] Soil storage means the depth of water per unit area of soil that can be absorbed by the soil (i.e., in the voids between soil particles) before runoff occurs. This storage depth varies based on the type soil used. For example, gravelly sandy loam has a soil storage of about 0.1 inches per inch of soil depth, which means that 1 inch of soil storage would require about 10 inches of soil. Smaller soil depths are possible with less dense soil mixes.

identified and detailed in a King County publication titled, *Stormwater Pollution Control Manual – Best Management Practices for Businesses* (July 1995). This publication is currently available free of charge for a single copy (additional copies are $10.05 with tax) at the Department of Natural Resources and Parks, Water and Land Resources Division, at 201 South Jackson, Suite 600, Seattle, or by phoning 206-296-6519. The publication can also be accessed on the Internet at http://dnr.metrokc.gov/wlr/dss/spcm.htm. If there are any questions about the application of the BMPs in this publication, technical assistance is available by phoning 206-296-1900.

4. A "**declaration of covenant and grant of easement**" granting King County right of access to the parcel for inspection purposes must be recorded with the King County Office of Records and Elections. A "declaration of covenant and grant of easement form" can be found in Appendix A of these protocols.

3.2.2 REVIEW AND APPROVAL PROCEDURES FOR IMPERVIOUS SURFACE REDUCTION CREDITS

To apply for this credit, the following steps are necessary:

1. The applicant (i.e., the parcel owner, or his or her designee) must contact the Division's Stormwater Services Section at 206-296-1900 to request a site assessment to determine eligibility for an "impervious surface reduction credit". This assessment may require one or more site visits by Division staff. All necessary site visits will be arranged with the applicant in advance of each visit.
2. Within 30 days of the applicant's request, the Division will either complete the site assessment or notify the applicant of the date when the assessment can be completed based on current workload.
3. Upon completion of the site assessment, the Division will contact the applicant and report one of the following determinations:
   a) The parcel is approved as eligible for the credit based on the Division's determination that the minimum characteristics necessary for the credit are in place (i.e., the "alternative surface" is installed and vegetation is established on over 90% of the surface's soil area). The credit will be applied in the calendar year that follows the year in which the minimum characteristics necessary for the credit were in place as of November 1st of the earlier year, and provided that all the minimum requirements for application of this credit are satisfied within 60 days of the Division's approval notice. Failure to satisfy these conditions within 60 days may result in the credit being delayed to the subsequent calendar year.
   b) The parcel is not approved for a credit and why.
   c) The parcel is eligible for a credit if certain improvements, repairs, or other structural measures are implemented to the satisfaction of the Division. For example, the Division may require grass to be re-established on a portion of the parcel's modular grid pavement.
   d) Additional technical information is needed to make a determination of eligibility. In most if not all cases, the Division will require submittal of construction plans, receipts, inspection documentation, soils reports, engineering reports, design details, landscape plans, as-built information, etc. in order verify compliance with the design specifications of the "alternative surfaces" used.
4. If additional technical information is requested, the applicant must submit the information within 60 days from the date of Division's request for information. Failure to meet this turnaround time may result in the credit (if and when approved) being delayed to the subsequent calendar year. If the additional information results in approval, such approval will be granted as described in Step

3.a) above. If the additional information results in the identification of improvements, repairs, or other structural measures necessary for eligibility, see Step 5 below.

5. If improvements, repairs, or other structural measures are identified as necessary for eligibility, these actions must be implemented to the Division's satisfaction before approval is granted as described in Step 3.a) above.
6. Once the parcel is approved as eligible for the credit, the Division will do routine site inspections or spot checks to verify compliance with the minimum requirements for such credits in Section 3.2.1 and the design specifications in Section 0 for the "alternative surface(s)" used.

3.3 DESIGN SPECIFICATIONS FOR IMPERVIOUS SURFACE REDUCTION MEASURES & ALTERNATIVE SURFACES

This section presents the design specifications for Division-approved pervious surfaces and alternative surfaces. The cost-share portion of the grant program applies to reduction of impervious surface by conversion to "compost-amended lawn", " native-vegetated landscape", or "grassed modular grid pavement" (which is viewed as an "alternative surface"). The credit portion of the grant program applies to the two alternative surfaces, "grassed modular grid pavement" and "vegetated roof".

3.3.1 IMPERVIOUS SURFACE REDUCTION MEASURES

Two types of pervious surface and one type of alternative surface are currently approved by the Division for conversion/reduction of existing impervious surface through the cost-share portion of the grant program. They are "compost-amended lawn", "native-vegetated landscape", and the alternative surface, "grassed modular grid pavement". The characteristics, benefits, and specifications of the two types of pervious surface are presented in this section.

3.3.1.1 COMPOST-AMENDED LAWN

Compost-amended lawn is one in which the underlying soil has been amended with compost to increase stormwater storage and infiltration, and reduce irrigation, pesticide, and fertilizer needs. Such effects reduce runoff peaks and volumes, water pollution, and demand on limited water supplies. These lawns also increase groundwater recharge important to stream flows during dryer months.

The cost of converting from pavement to compost-amended lawn is very roughly estimated to be around $1.00 per square-foot for areas of about 10,000 square feet. Smaller areas will cost more and larger areas could be less. *Please be advised that this estimate is only an estimate and costs could vary significantly from one site to the next; therefore, it is strongly recommended that any parcel owner interested in using this reduction measure obtain bids from a reputable contractor.*

To qualify for the cost-share program, all of the following design specifications must be met:

1. The dimensions of impervious surface area to be converted may be any length and width, but the area of compost-amended lawn must be no smaller than 5 feet in length and 5 feet in width. If the total impervious area to be converted is made up of smaller conversion areas in separate locations on the parcel, the area of compost-amended lawn for each separate conversion area must be no smaller than 5 feet in length and 5 feet in width. *Note: the County's cost-share program only applies to the area(s) of impervious surface converted.*
2. Existing impervious surface and any underlying base course (e.g., crushed rock, gravel, etc.) must be completely removed from the conversion area(s).

3. Conversion area soils must be broken up to a depth of 12 to 18 inches. This can be accomplished with either a backhoe equipped with a bucket with teeth, or a ripper towed behind a tractor. The soil must then be tilled to further break up and decompact the soil. Rocks and other debris should be removed.
4. At least 4 inches of 100% decomposed compost and any other required amendments of lime and fertilizer as recommended by a soil analysis must be tilled or otherwise mixed into the top 8 inches of the decompacted soil. After tilling, conversion area soils must be only lightly compacted. A grass roller and hand tools are appropriate for light compaction.
5. Grass (or other dense ground cover as approved by the Division) must be planted over the entire conversion area(s). Trees or shrubs may also be planted in the conversion area(s). Planting of grass must be done by hydroseeding or hand seeding; application of sod is not acceptable.
6. Grass (or other dense ground cover) must be well established on at least 90% of the total converted area before reimbursement of the County's agreed upon cost-share is reimbursed to the applicant. The Division will do routine inspections or spot checks to verify that this minimum coverage is maintained. Any reduction in SWM fee associated with the reduction in impervious surface will be applied in the calendar year that follows the year in which the impervious surface was removed and the underlying soils were broken up, so long as such actions were completed as of November 1st of that previous year.
7. The new compost-amended lawn area must not be subject to any use that would significantly compact the soil such as vehicular parking. Recreational uses are acceptable as long as the runoff characteristics of the surface are not changed. The Division's routine inspections or spot checks will verify that the converted area is not being used in a manner that significantly compromises its benefits.

3.3.1.2 NATIVE-VEGETATED LANDSCAPE

Native-vegetated landscape is intended to have the soil, vegetation, and runoff characteristics approaching that of natural forestland. Conversion requires the planting of native trees, shrubs, and ground cover in compost-amended soil. Such conversion reduces peak surface water volumes and runoff by increasing stormwater storage, infiltration, and evapotranspiration (absorption and evaporation by native plants). A forested landscape also increases groundwater recharge important to stream flows during dryer months, and reduces water temperatures with shade, beneficial for salmon juveniles.

The cost of converting from pavement to native-vegetated landscape is roughly $2.00 per square-foot for a 10,000 square-foot area. Smaller areas will cost more and larger areas could be less. *Please be advised that this estimate is only an estimate and costs could vary significantly from one site to the next; therefore, it is strongly recommended that any parcel owner interested in using this reduction measure obtain bids from a reputable contractor.*

To qualify for the cost-share program, all of the following design specifications must be met:

1. The dimensions of impervious surface area to be converted may be any length and width, but the area of native-vegetated landscape must be no smaller than 20 feet in length and 20 feet in width. If the total impervious area to be converted is made up of smaller conversion areas in separate locations on the parcel, the area of native-vegetated landscape for each separate conversion area must be no smaller than 20 feet in length and 20 feet in width. *Note: the County's cost-share program only applies to the area(s) of impervious surface converted.*
2. Existing impervious surface and any underlying base course (e.g., crushed rock, gravel, etc.) must be completely removed from the conversion area(s).
3. Underlying soils must be broken up to a depth of 18 inches. This can be accomplished with either a backhoe equipped with a bucket with teeth, or a ripper towed behind a tractor.

4. At least 6 inches of well-decomposed compost must be thoroughly mixed into the upper 18 inches of soil through tilling or other means. The finished surface should be gently undulating and must be only lightly compacted.

5. The area of native-vegetated landscape must be planted with native-species trees, shrubs, and ground cover from Table 3.3.1.2.A (next page). Species must be selected as appropriate for site shade and moisture conditions, and in accordance with the following requirements:

   a) Trees: a minimum of two species of trees must be planted, one of which is a conifer. Conifer and other tree species must cover the entire site at the spacing given in Table 1.

   b) Shrubs: a minimum of two species of shrubs should be planted. Space plants to cover the entire site, excluding points where trees are planted.

   c) Groundcover: a minimum of two species of ground cover should be planted. Space plants so as to cover the entire site, excluding points where trees or shrubs are planted.

   Note: for sites larger than 10,000 square feet, planting a greater variety of species than the minimum suggested above is strongly encouraged. For example, an acre could easily accommodate three tree species, three species of shrubs, and two or three species of groundcover.

6. At least 6 inches of hog fuel must be placed between plants as mulch for weed control. It is also possible to mulch the entire area before planting; however, an 18-inch diameter circle must be cleared for each plant when it is planted in the underlying amended soil. *Note: plants and their root systems that come in contact with hog fuel or raw bark have a poor chance of survival.*

7. Plantings must be watered consistently once per week during the dry season for the first two years.

8. The plantings must be well established on at least 90% of the converted area before the County's agreed upon cost-share is reimbursed to the applicant. The Division will do routine inspections or spot checks to verify that the plantings are surviving and this minimum coverage is maintained. Any reduction in SWM fee associated with the reduction in impervious surface will be applied in the calendar year that follows the year in which the impervious surface was removed and the underlying soils were broken up, so long as such actions were completed as of November 1st of that previous year.

9. The native-vegetated landscape area must not be subject to any use that would significantly change the runoff characteristics of the area through compaction of the soil and/or removal of native vegetation. The Division's routine inspections or spot checks will verify that the converted area is not being used in a manner that significantly compromises its benefits.

TABLE 3.3.1.2.A SELECTED NATIVE VEGETATION, SIZE, AND SPACING REQUIREMENTS				
Species	**Type**	**Sun and Moisture Preferences**	**Planted Size**	**Spacing**
TREES				
Douglas fir (*Psedotsuga menziesii*)	conifer	Sun, dry to moist soil	5 gallon, 6'-7' B&B	12' o.c.
Western red cedar (*Thuja plicata)*	conifer	Sun or shade, moist to wet soil	5 gallon, 6'-7' B&B	12' o.c.
Western hemlock (*Tsuga heterophylla)*	conifer	Sun or shade, well-drained soil	5 gallon, 6'-7' B&B	12' o.c.
Sitka spruce (*Picea sitchensis*)	conifer	Sun or shade, moist mineral soils to wet soils	5 gallon, 6'-7' B&B	12' o.c.
Red alder (*Alnus rubra*)	tree	Sun, a Nitrogen fixer,	5 gallon, 5'-6' B&B	12' o.c.
Bigleaf maple (*Acer macrophyllum)*	tree	Sun or shade, dry to moist soil	5 gallon, 5'-6' B&B	12' o.c.
Black cottonwood (*Populus trichocarpa)*	tree	Sun, wet soil	5 gallon, 5'-6' B&B	12' o.c.
Cascara (*Rhamnus purshiana*)	tree/shrub	Sun to partial shade, dry to moist soil	5 gallon, 5'-6' B&B	8' o.c.
Pacific willow (*Salix lucida*)	tree/shrub	Sun, damp soil	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
SHRUBS				
Sitka willow (*Salix sitchensis)*	shrub	Sun or shade, dry to damp soil	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Vine maple (*Acer circinatum*)	shrub	Shade, moist to damp soils	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Filbert (hazelnut) (*Corylus cornuta*)	shrub	Sun to shade, dry soil	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Salmonberry (*Rubus spectabilis*)	shrub	Sun to shade, moist to wet soil	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Thimbleberry (*Rubus parviflorus*)	shrub	Sun to partial shade, dry to moist soil	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Ocean spray (*Holodiscus discolor*)	shrub	Sun to partial shade, dry	1 gallon 2 gallon 5 gallon	4' o.c. 6' o.c. 8' o.c.
Tall Oregon grape (*Berberis aquifolium*)	shrub	Sun to shade, dry to moist soil	1 gallon	4' o.c.
Snowberry (*Symphoricarpos albus*)	shrub	Sun to shade, dry to wet soil	1 gallon, 30-36"	4' o.c.
Service berry *(Amelanchier alnifolia*)	shrub	Sun to shade, dry to wet soil	1 gallon	6' o.c.
Indian plum (*Oemleria cerasiformis*)	shrub	Sun to shade, moist soil	1 gallon	4' o.c.
Twinberry (*Lonicera involucrata*)	shrub	Sun to partial shade, moist soil	1 gallon	4' o.c.
GROUND COVER				
Evergreen huckleberry (*Vaccinium ovatum*)	groundcover	Sun to partial shade, moist soil	1 gallon	2' o.c.
Kinnikinick (*Arctostaphyllos uva-ursa*)	groundcover	Sun to partial shade, dry soil	1 gallon	2' o.c.
Salal (*Gaultheria shallon*)	groundcover	Sun to shade, dry to moist soil	1 gallon	18" o.c.
Low Oregon grape (*Mahonia repens*)	groundcover	Sun to partial shade, dry to moist soil	9-12"	18" o.c.
Sword fern (*Polystichum munitum*)	groundcover	Sun to deep shade, dry to moist soil	2 gallon	3' o.c.

3.3.2 ALTERNATIVE SURFACES FOR REDUCING IMPERVIOUS SURFACE EFFECTS

Two types of alternative surfaces are currently approved by the Division for conversion of existing impervious surface to pervious-like surface for the purposes of granting an "impervious surface reduction credit". They are "grassed modular grid pavement" and "vegetated roof". The characteristics, benefits, and specifications of these alternative surfaces are presented in this section. The grassed modular grid pavement surface is also eligible for the cost-share portion of the grant program.

3.3.2.1 GRASSED MODULAR GRID PAVEMENT

Grassed modular grid pavement (also known as "green pavement") consists of a lattice of concrete, plastic, or other load bearing material over a permeable base of gravel or sand (or both) and with grass planted in the openings of the grid or in a layer of soil over the grid. This type of pavement may be used for low-traffic or infrequently used areas such as low-traffic driveways, overflow parking, event parking, church parking, employee parking, maintenance access roads, etc. On the Internet, there is information on several manufacturers of the modular grid materials used for such pavement.

The benefits of this measure are reduced runoff peaks and volumes resulting from the increased infiltration of stormwater, the increased water storage provided in the grid soil and base, and the increased evapotranspiration provided by the grass. The grassed surface also helps remove pollutants that are left behind by vehicles and helps reduce water temperatures harmful to fish.

The installation cost for grassed modular grid pavement varies with the type of grid material used and the amount of area to be covered. For small installations of about 10,000 square feet, information found on the Internet suggests that installation costs would be in the range $2.50 to $3.00 per square-foot. Larger installations would be less. This cost does not include removal of existing pavement and excavation for the base, which could range from $0.20 to $0.25 per square-foot. *Please be advised that these estimates are only estimates; therefore, it is strongly recommended that any parcel owner interested in using this alternative surface obtain bids from a reputable contractor that specializes in the installation of modular grid pavement.*

To qualify for the cost-share program and an "impervious surface reduction credit" of 100%, all of the following design specifications must be met:

1. For proposed conversions, existing impervious surface must be completely removed from the conversion area(s). It may be possible to reuse the underlying base course (e.g., crushed rock or gravel) as part of the base required under the modular grid material.
2. A minimum 6-inch permeable base of gravel or sand (or both) must be placed under the modular grid material. The composition and compaction of the base and any depth required beyond 6-inches must be designed by a licensed civil engineer to onsite soil conditions, expected loading, and the manufacturer's instructions for the modular grid material. For existing installations, documentation of the base composition and depth must be provided to the Division.
3. The surface area of the modular grid openings must be at least 50% of the total surface area of the modular grid pavement.
4. The modular grid material must be installed according to the manufacturer's instructions.
5. A pervious sandy soil mix suitable for growing grass must be placed in the grid openings as specified by the manufacturer's instructions or a landscape architect. For existing installations, documentation of the soil composition must be provided to the Division.
6. Grass must be must be well established on at least 90% of the modular grid pavement area to which an "impervious surface reduction credit" is applied toward a reduction in SWM fee. The

Division will do routine inspections or spot checks to verify that this minimum coverage is maintained.

3.3.2.2 VEGETATED ROOF

A vegetated roof (also known as a "green roof") consists of (1) a soil layer sufficient in depth to grow grass or other vegetative cover, (2) an underdrain system to dissipate excess water from the soil, and (3) a plastic or rubber membrane to waterproof the roof surface.

The benefits of this alternative surface are reduced runoff peaks and volumes resulting from the increased water storage provided by the soil and the increased evapotranspiration provided by the vegetation.

The cost of this alternative surface is quite variable depending on the type of roof, access to the roof, the depth of the soil layer, the type of underdrain system used, and the extent to which the roof must be reinforced to handle the additional load of the soil. Information found on the Internet suggests that installation costs could range from $15 to $20 per square-foot. *Please be advised that these estimates are only estimates; therefore, it is strongly recommended that any parcel owner interested in using this alternative surface obtain bids from a reputable contractor that specializes in the installation of vegetated roof systems.*

To qualify for the "impervious surface reduction credit" of 90, 60, or 30% for corresponding soil storage depths of 3, 2, and 1 inches[9], all of the following design specifications must be met:

1. The structural integrity of the roof must be certified by a licensed structural civil engineer as adequate to handle the increased load of saturated soil in addition to other assumed loads specified in King County building codes. This certification must be provided to the Division in the form of a technical report stamped by the structural engineer. If the structural engineer identifies a need for structural improvements, these improvements must be made under the supervision of the structural engineer and certified by him or her as adequate.
2. A 60- to 80-mil reinforced PVC membrane (or equivalent) must be placed on the roof surface to provide waterproofing and protect against root penetration. If the roof is asphalt-based, the membrane must be high-density polyethylene (HDPE).
3. If the roof surface is flat or has a pitch flatter than 1 in 12, an underdrain system or layer must be provided to drain excess water away from the root zone of the soil layer.
4. The soil layer must be adequately contained on the roof with sidewalls or other appropriate means. On roofs with a pitch steeper than 3 in 12, the soil containment system must be designed by a licensed civil engineer.
5. The composition of the soil layer must be confirmed by a licensed civil engineer as meeting the desired soil storage and the maximum allowable loading specified by the structural engineer.
6. Grass or other vegetative cover suitable for shallow soils and harsh roof conditions (e.g., various species of sedum, sempervivum, creeping thyme, allium, phloxes, anntenaria, armeria, and aubrieta) must be well established on at least 90% of the roof area to which an "impervious surface reduction credit" is applied toward a reduction in SWM fee. The Division will do routine inspections or spot checks to verify that this minimum coverage is maintained.
7. The converted area must not be subject to any use that would significantly compact the soil. The Division's routine inspections or spot checks will verify that the vegetated roof area is not being used in a manner that significantly compromises its benefits.

[9] Note: in order to achieve these soil storage depths, actual soil layer depths of 3 to 10 times these storage depths may be needed depending on the soil composition.

SECTION 4.0 DEFINITIONS

Developed Parcel means any parcel altered from the natural state by the construction, creation, or addition of impervious surfaces.

Division means the King County Water and Land Resources Division or its successor agency.

Director means the Director of the King County Department of Natural Resources and Parks or its successor agency or the Director's designee.

Drainage Facility means a constructed or engineered feature that collects, conveys, stores or treats surface and storm water runoff. Drainage facilities shall include, but not be limited to, constructed or engineered streams, pipelines, channels, ditches, gutters, lakes, wetlands, closed depressions, flow control or water quality treatment facilities, erosion and sediment control facilities and other structures and appurtenances that provide for drainage.

Drainage System means the system that collects, conveys, stores, and treats surface and storm water runoff. The drainage system includes streams, pipes, ditches, swales, lakes, wetlands, closed depressions, flow control facilities, water quality treatment facilities, erosion and sediment control facilities, and other drainage structures and appurtenances, both natural and constructed.

Effective Impervious Area (EIA) for the purposes of applying site-specific limits on effective impervious surface, means all impervious surface area on a development site except those portions which meet one of the following three conditions:

1. The impervious surface runoff is "fully dispersed" using the full dispersion Best Management Practices (BMPs) set forth in Section 2.3.2 of these protocols.
2. The impervious surface runoff is fully infiltrated according to the infiltration standards in the SWDM.
3. The impervious surface runoff is managed in an alternative way approved by the County that effectively mitigates all of the hydrologic effects of the impervious surface (i.e., increased runoff peaks, frequencies, volumes, and flashiness, and decreased groundwater recharge).

Impervious surface area that does not meet one of the above three conditions is considered to be effective impervious area (at the "site scale" as opposed to a "watershed scale") even if its runoff flows over pervious area before reaching the local drainage system or flows through an onsite stormwater detention facility.

Flow Control Facility means a drainage facility designed to mitigate the impacts of increased surface and storm water runoff generated by site development pursuant to the drainage requirements in KCC Chapter 9.04. Flow control facilities are designed either to hold water for a considerable length of time and then release it by evaporation, plant transpiration, and/or infiltration into the ground or to hold runoff for a short period of time and then release it to the conveyance system.

Flow Control BMP means a best management practice for mitigating the increased quantity of surface and storm water runoff generated by site development. Flow control BMPs are simple techniques and devices for dispersing and infiltrating runoff into pervious areas where practicable so as to reduce runoff volumes and flashiness and increase groundwater recharge.

Impervious Surface means a hard surface area which either prevents or retards the entry of water into the soil mantle as it entered under natural conditions prior to development, and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roofs, walkways, patios, driveways, parking lots, storage areas, areas which are paved, graveled or made of packed or oiled earthen materials or other surfaces which similarly impede the natural infiltration of surface and storm water. Open, uncovered flow control

and water quality treatment facilities shall not be considered as impervious surfaces for the purpose of these protocols.

Parcel Area means a parcel's total land area as defined by its boundaries.

Maintenance means the act or process of cleaning, repairing or preserving a system, unit, facility, structure, or piece of equipment.

Native Vegetation means any contiguous area of uncompacted soil and vegetation predominantly comprised of plant species, other than noxious weeds, which are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas fir, western hemlock, western red cedar, alder, big-leaf maple and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

Licensed Civil Engineer means a person registered with the State of Washington as a professional engineer (PE) in civil engineering.

Licensed Land Surveyor means a person registered with the State of Washington as a professional land surveyor (PLS).

Licensed Structural Engineer means a person registered with the State of Washington as a professional engineer in structural engineering.

Open Space for the purposes of these protocols means any parcel, property or portion thereof classified for current use taxation under KCC Chapter 20.36 and Chapter 84.34 RCW, or for which the development rights have been sold to King County under KCC Chapter 26.04. This definition includes lands which have been classified as open space, agricultural or timber lands under criteria contained in KCC Chapter 20.36 and Chapter 84.34 RCW.

Parcel means the smallest separately segregated unit or plot of land having an identified owner, boundaries and surface area which is documented for property tax purposes and given a tax lot number by the King County assessor.

Rate Category means the classification given to a parcel in the service area based upon the type of land use on the parcel and the percentage of impervious surface area contained on the parcel.

Residence means a building or structure or portion thereof, designed for and used to provide a place of abode for human beings. The term residence includes the term "residential" or "residential unit" as referring to the type of or intended use of a building or structure.

Residential Parcel means any parcel which contains no more than three residences or three residential units which are within a single structure and is used primarily for residential purposes.

Runoff means water originating from rainfall and other precipitation that is found in drainage facilities, rivers, streams, springs, seeps, ponds, lakes and wetlands as well as shallow ground water.

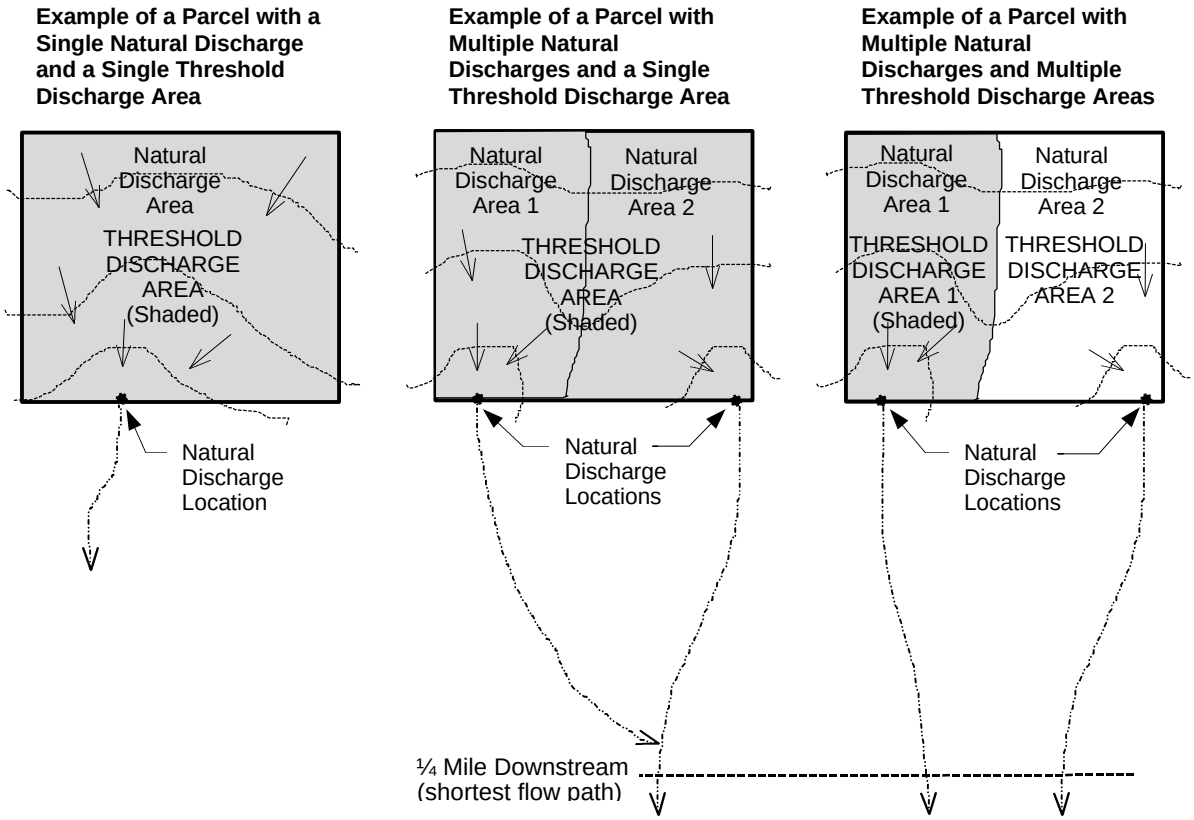
Service Area means the entire unincorporated King County area, which is served by the activities, programs, and capital improvements funded by the annual SWM fee collected from developed properties in the area.

Surface and Storm Water means water originating from rainfall and other precipitation that is found in drainage facilities, rivers, streams, springs, seeps, ponds, lakes and wetlands as well as shallow ground water.

Surface Water Design Manual means the manual (and supporting documents as appropriate) describing surface and storm water design and analysis requirements, procedures, and guidance which has been formally adopted by rule under the procedures specified in KCC 2.98. The *Surface Water Design Manual* is available from the King County Department of Development and Environmental Services or the Department of Natural Resources and Parks.

Surface Water Management (SWM) Fee Protocols means the surface water management fee standards and procedures which have been formally adopted by rule under the procedures specified in KCC Chapter 2.98. The SWM Fee Protocols are available from the Department of Natural Resources and Parks, Water and Land Resources Division or their successor agencies.

Threshold Discharge Area means a portion of a parcel that drains to a single natural discharge location or multiple natural discharge locations that combine within one-quarter-mile downstream (as determined by the shortest flowpath). The examples below illustrate this definition. The purpose of this definition is to clarify how the thresholds of standards are applied to parcels with multiple discharge points.



Undeveloped Parcel means any parcel that has not been altered from its natural state by the construction, creation, or addition of impervious surface.

Water Quality Treatment Facility means a drainage facility designed to reduce pollutants once they are already contained in surface and storm water runoff. Water quality treatment facilities are the structural component of best management practices (BMPs). When used singly or in combination, water quality facilities reduce the potential for contamination of surface or ground waters, or both.

APPENDIX A

DECLARATION OF COVENANT AND GRANT OF EASEMENT FORM

After Recording return to:

_____
_____
_____

DECLARATION OF COVENANT AND GRANT OF EASEMENT

IN CONSIDERATION of receiving (check one of the following) ❑ a discount to the King County Surface Water Management Fee pursuant to Title 9 of the King County Code, as amended from time to time, ❑ an impervious surface reduction credit to be applied to the measurement of impervious surface for determination of the King County Surface Water Management Fee, or ❑ funding for conversion of impervious surface to pervious or pervious-like surface, Grantor(s), the owner(s) in fee of that certain parcel of land more particularly described in Exhibit A, attached hereto and incorporated herein ("Property"), hereby covenants with King County, a political subdivision of the state of Washington its successors in interest and assigns ("King County"), that it will observe, consent to and abide by the conditions and obligations set forth and described in Paragraphs 2 through 6 below with regard to the Property, and hereby grants an access easement on and to the Property to King County, for the purposes described in Paragraph 1 below. Grantor(s) hereby grants, covenants and agrees as follows:

1. King County shall have a nonexclusive perpetual access easement on the Property in order to ingress and egress over the Property for the sole purposes of inspecting, monitoring, and,

in accordance with the terms of Paragraph 3 below, maintaining or repairing, storm water facilities, drainage improvements, drainage structures and drainage areas and pathways ("Drainage System") on the Property.

2. Grantor(s) shall at its (their) own cost maintain and keep in good repair the Drainage System.

3. If King County determines that maintenance or repair work is required to be done to the Drainage System and has not been performed by Grantor, the Manager of the Water and Land Resources Division of the King County Department of Natural Resources and Parks shall give notice to Grantor(s) of the specific maintenance and/or repair work required pursuant to Title 9 of the King County Code. The Manager shall also set a reasonable time in which such work is to be completed by the Grantor(s). If the above required maintenance or repair is not completed with the time set by the Manager, King County may perform the required maintenance or repair. Written notice will be sent to the Grantor(s) stating King County's intention to perform such maintenance or repair. Maintenance or repair work will not commence until at least seven (7) days after such notice is mailed. If, within the sole discretion of the Water and Land Resources Division Manager, there exists an imminent or present danger, the seven (7) day notice period will be waived and maintenance and/or repair work will begin immediately.

4. The Grantor(s) shall assume all responsibility for the cost of any maintenance and for repairs to the Drainage System. Such responsibility shall include reimbursement to King County

within thirty (30) days of the receipt of the invoice for any such work performed by King County in accordance with the terms of Paragraph 3 above. Overdue payments will require payment of interest at the current legal rate as liquidated damages. In the event that King County does not receive reimbursement within the required time frame, it may elect to place a lien on the Property and act upon the lien in accordance with the terms and procedures specified in Chapter 23.40 of the King County Code, as amended from time to time. If legal action is taken to enforce the provisions of this Paragraph, the prevailing party is entitled to costs and attorney's fees.

5. Apart from performing routine landscape maintenance, the Grantor(s) is (are) hereby required to obtain written approval from the Water and Land Resources Division Manager of the King County Department of Natural Resources and Parks prior to performing any alterations or modifications to the Drainage System. Any notice or consent required to be given or otherwise provided for by the provisions of this Declaration of Covenant and Grant of Easement shall be effective upon personal delivery, or three (3) days after mailing by Certified Mail, return receipt requested, whichever occurs sooner.

6. This Declaration of Covenant and Grant of Easement is intended to promote the efficient and effective management of surface water drainage on the Property, and it shall inure to the benefit of all the citizens of King County, its successors and assigns. This Declaration of Covenant and Grant of Easement shall run with the land and be binding upon Grantor(s), and Grantor's (s') successors in interest and assigns.

IN WITNESS WHEREOF, this Declaration of Covenant and Grant of Easement is executed this _____day of _____, 200_.

By _____

Its _____

By _____

Its _____

STATE OF WASHINGTON)
COUNTY OF KING)ss.

On this day personally appeared before me:

_____, to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes therein stated.

Given under my hand and official seal this _____ day of _____, 200__.

_____
NOTARY PUBLIC in and for the
State of Washington, residing at
_____
_____
_____
My Commission Expires: _____

APPENDIX B

COST-SHARE REQUEST FORM

Impervious Surface Reduction Cost-Share Request Form

NAME_____ PHONE_____

SOCIAL SECURITY NUMBER_____

ADDRESS_____

ADDRESS OF PROPERTY WHERE IMPERVIOUS SURFACE REDUCTION MEASURES ARE TO BE INSTALLED, IF DIFFERENT THAN ABOVE

LEGAL DESCRIPTION OF PROPERTY WHERE IMPERVIOUS SURFACE REDUCTION MEASURES ARE TO BE INSTALLED:

I have already or intend to apply for additional assistance from another entity (Y or N)_____
(If yes, certain limitations may apply, please list the additional source)

I request cost-share assistance for the proposed impervious surface reduction measure(s) described in the attached plot plan, written description, and supporting technical information. I have read and understand the cost-share minimum requirements. I agree to refund all or part of the funds paid to me as determined by the Approving Official, if, within 10 years from the date of final approval, I, (a) fail to maintain the measure (b) destroy the measure, or (c) voluntarily relinquish control or title to the land on which the measure has been established and the new owner and/or operator of the land does not agree in writing to properly maintain the measure for the remainder of the 10 years. I authorize access by a designee of the King County Water and Land Resources Division to the measure site area, provided advance notice is given.

_____
Applicant Signature/Date

I certify that I am the legal owner of the property described on this application. I give the aforementioned applicant the permission to install the practices listed on page one of this application.

_____
Landowner Signature (if different than above)/Date

_____
King County Water and Land Resources Division Approval/Date

REMARKS:

Participation in this program is open to all eligible applicants without regard to race, color, religion, national origin, age, sex, marital status, or disability.

Send to:
King County Department of Natural Resources and Parks
Water and Land Resources Division - _____
201 South Jackson, Suite. 600
Seattle, WA 98104
Phone (206) 296-1900 FAX (206) 296-0192